THE AMERICAN JOURNAL *of* PSYCHIATRY

VOLUME 117
NUMBER 6
DEC. 1960

Official Journal of
THE AMERICAN PSYCHIATRIC ASSOCIATION

1961 Annual Meeting, Morrison Hotel, Chicago, Ill. • May 8-May 12, 1961

Proven

in over five years of clinical use and
more than 750 published clinical studies

Effective

for relief of anxiety and tension

Outstandingly Safe

- simple dosage schedule produces rapid, reliable tranquilization without unpredictable excitation
- no cumulative effects, thus no need for difficult dosage readjustments
- does not produce ataxia, change in appetite or libido
- does not produce depression, Parkinson-like symptoms, jaundice or agranulocytosis
- does not impair mental efficiency or normal behavior

Miltown®

meprobamate (Wallace)

Usual dosage: **One or two 400 mg. tablets t.i.d.**
Supplied: **400 mg. scored tablets, 200 mg. sugar-coated tablets; or as MEPROTABS*– 400 mg. *unmarked*, coated tablets.**

OM-2058

WALLACE LABORATORIES / *Cranbury, N. J.*

*TRADE-MARK

DECEMBER CONTENTS 1960

PSYCHIATRIC AND MEDICOLEGAL IMPLICATIONS OF GENETIC AND ENDOCRINOLOGIC RESEARCH IN SEX DETERMINATION. *Karl Bowman, Bernice Engle, and Marjorie Mergener* ... 481

THE COMMON FRONTIERS OF PSYCHIATRY AND LAW. *Lawrence Z. Freedman, and Harold D. Lasswell* ... 490

THE PSYCHOPHYSIOLOGIC SEQUELAE OF HEAD INJURIES. *Arthur H. Auerbach, A. E. Scheflen, R. B. Reinhart, and C. K. Scholz* ... 499

PRINCIPLES OF ADMINISTRATIVE THERAPY. *D. H. Clark* ... 506

BEHAVIORIAL CHANGES DURING HYPOTHALAMIC OR LIMBIC STIMULATION IN THE MONKEY. *Lorne D. Proctor, Robert D. Knighton, J. Behin, and Jerome S. Lukaszewski* ... 511

THE PSYCHOTHERAPY THAT WAS MORAL TREATMENT. *Eric T. Carlson, and Norman Dain* ... 519

LATE RESULTS OF ORBITAL UNDERCUTTING: REPORT OF 76 PATIENTS UNDERGOING QUANTITATIVE SELECTIVE LOBOTOMIES. *William Beecher Scoville* ... 525

COMPARATIVE CLINICAL EXPERIENCE WITH FIVE ANTIDEPRESSANTS. *John P. Holt, Eleanore R. Wright, and Arthur O. Hecker* ... 533

PROFOUND EXPERIMENTAL SENSORY ISOLATION. *Jay T. Shurley* ... 539

CLINICAL NOTES:

The Effect of R-1625 (Haloperidol) in Mental Syndromes: A Multiblind Study. *H. Azima, H. Durost, and Dorothy Arthurs* ... 546

Preliminary Report on Mellaril in Epilepsy. *Marie M. Frain* ... 547

Trifluoperazine and Tranylcypromine in Chronic Refractory Schizophrenics. *Walter Kruse* ... 548

Methylphenidate Interviews in Psychotherapy. *George A. Rogers* ... 549

Imipramine Treatment. *Michael J. Keith* ... 550

Imipramine Hydrochloride (Tofrānil) and Enuresis. *R. E. G. MacLean* ... 551

A Study with Norethandrolone (Nilevar) in a Mental Hospital on Patients with Bowel and Bladder Incontinence. *Sol Sherman* ... 551

CASE REPORTS:

The Gambler and his Love. *Iago Galdston* ... 553

Gasoline Sniffing. *R. V. Edwards* ... 555

Prolonged Phenothiazine Hepatitis: Report of a Case. *Bruce H. Bailey, and Robert E. Kay* ... 557

COMMENTS:

Introspection ... 559

CORRESPONDENCE:

Urinary Tests for Piperazine-Linked Phenothiazines and for Chlorpromazine ... 561

Frankl's Logotherapy ... 563

NEWS AND NOTES ... 565

BOOK REVIEWS ... 570

IN MEMORIAM:

Victor Vance Anderson ... 575

In depression

To restore emotional stability during the declining years

Tofrānil®

brand of imipramine hydrochloride

Thymoleptic

New for geriatric use

Tablets of 10 mg.

Recent studies[1-3] strongly indicate underlying depression as a causative factor, and Tofranil as an eminently successful agent, in restoring the difficult geriatric patient to a more contented frame of mind and more manageable disposition.

1. Cameron, E.: The Use of Tofranil in the Aged, Canad. Psychiat. A. J. Special Supplement, **4**:S160, 1959. 2. Christe, P.: Indications for Tofranil in Geriatrics, Schweiz. med. Wchnschr. **90**:586, 1960. 3. Schmied, J., and Ziegler, A.: Tofranil in Geriatrics, Praxis **49**:472, 1960.

Also Available:

For the treatment of non-geriatric depression: Tofranil tablets of 25 mg. and ampuls of 25 mg. in 2 cc. solution.

Geigy, Ardsley, New York

TO-451-60

THE AMERICAN JOURNAL OF PSYCHIATRY

VOLUME 117 DECEMBER 1960 No. 6

EDITOR

CLARENCE B. FARRAR, M.D., 216 St. Clair Avenue, West, Toronto 5, Ont.

BUSINESS MANAGER

AUSTIN M. DAVIES, PH. B., 1270 Avenue of The Americas, New York 20, New York

ASSOCIATE EDITORS

WILLIAM RUSH DUNTON, JR., M. D.
FRANKLIN G. EBAUGH, M. D.
STANLEY COBB, M. D.
S. SPAFFORD ACKERLY, M. D.
LEO KANNER, M. D.
LAUREN H. SMITH, M. D.
KARL M. BOWMAN, M. D.
WALTER L. TREADWAY, M. D.
JOHN C. WHITEHORN, M. D.
PAUL H. HOCH, M. D.
TITUS H. HARRIS, M. D.
FRANCIS J. GERTY, M. D.

EDITORIAL ASSISTANT

JOANNE C. DICK, B. A.
SYLVIA L. LAMBERT, B. A.

FORMER EDITORS, 1844-1931

AMARIAH BRIGHAM, M. D., Founder, 1844-1849

T. ROMEYN BECK, M. D.
RICHARD DEWEY, M. D.
JOHN P. GRAY, M. D.
HENRY M. HURD, M. D.
G. ALDER BLUMER, M. D.
EDWARD N. BRUSH, M. D.

Published by
THE AMERICAN PSYCHIATRIC ASSOCIATION
THE DARTMOUTH PRINTING COMPANY
HANOVER, N. H.

WHEN PARKINSONISM COMPLICATES PHENOTHIAZINE THERAPY

Tremors, rigidity, cramps, and spasm due to treatment with potent phenothiazines are "easily alleviated with COGENTIN,"[1] even in many cases when other drugs have failed.[2] COGENTIN is a most powerful antispasmodic,[3] yet its long, cumulative action is unusually well tolerated. By controlling parkinsonism and other extrapyramidal symptoms, COGENTIN usually enables the physician to continue the full benefits of phenothiazine management.

Detailed directions for the use of COGENTIN, including dosage and routes of administration, are available to physicians on request.

NEW DOSE FORM: INJECTION COGENTIN, 1 mg. per cc., ampuls of 2 cc. Also available: Tablets COGENTIN (quarterscored), 2 mg., bottles of 100 and 1000.

1. Ayd, F. J.: Clin. Med. 6:387, 1959. 2. May, R. H.: Am. J. Psychiat. 116:360, 1959. 3. Brock, S. (Moderator): Bull. New York Acad. Med. 32:202, 1956.

COGENTIN is a trademark of Merck & Co., Inc.

MERCK SHARP & DOHME
Division of Merck & Co., Inc., West Point, Pa.

COGENTIN

METHANESULFONATE (BENZTROPINE METHANESULFONATE)

THE AMERICAN PSYCHIATRIC ASSOCIATION

OFFICERS 1960-1961

President: ROBERT H. FELIX
Vice President: D. GRIFFITH MCKERRACHER
Secretary: C. H. HARDIN BRANCH

President-Elect: WALTER E. BARTON
Vice President: R. W. WAGGONER
Treasurer: ADDISON M. DUVAL

COUNCILLORS

For 3 years
WILLIAM MALAMUD
DANIEL BLAIN
DAVID A. BOYD, JR.
M. RALPH KAUFMAN

For 2 years
FRANCIS J. GERTY
PAUL HOCH
CALVIN DRAYER
ALDWYN STOKES

For 1 year
HARRY C. SOLOMON
LAWRENCE C. KOLB
DANA L. FARNSWORTH
ROBERT T. MORSE

EXECUTIVE COMMITTEE

ROBERT H. FELIX
WALTER E. BARTON
C. H. HARDIN BRANCH
ADDISON M. DUVAL
WILLIAM MALAMUD
ALDWYN B. STOKES
Ex-Officio
D. GRIFFITH MCKERRACHER
R. W. WAGGONER

ASSEMBLY OF DISTRICT BRANCHES

JOHN R. SAUNDERS (Speaker)
EDWARD G. BILLINGS (Speaker Elect)
LESTER E. SHAPIRO (Recorder)

MEDICAL DIRECTOR

MATHEW ROSS, 1700-18th Street, N. W., Washington 9, D. C.

EXECUTIVE ASSISTANT

AUSTIN M. DAVIES, 1270 Avenue of the Americas, New York 20, New York

CHAIRMEN OF COMMITTEES

CONSTITUTIONAL COMMITTEES

Arrangements
HUGH T. CARMICHAEL
Board of Tellers
EVELYN IVEY
Ethics
MESROP TARUMIANZ
Membership
DICK MCCOOL
Nominating
FRANCIS J. BRACELAND

STANDING COMMITTEES (Internal Activities of the Association)

Budget
JACK EWALT
Constitution and By-Laws
HENRY A. DAVIDSON
House
ZIGMOND LEBENSOHN
Increasing Responsibilities of the APA
HARVEY J. TOMPKINS
Program
JOHN DONNELLY

STANDING COMMITTEES (Technical Aspects)

HARVEY J. TOMPKINS
Coordinating Chairman
Aging
EWALD W. BUSSE
History of Psychiatry
J. SANBOURNE BOCKOVEN
Medical Education
C. KNIGHT ALDRICH
Mental Deficiency
GEORGE TARJAN
Psychiatry of Childhood and Adolescence
REGINALD S. LOURIE
Public Health
JAMES V. LOWRY
Rehabilitation
BENJAMIN SIMON
Research
MILTON GREENBLATT
Therapy
HENRIETTE R. KLEIN

STANDING COMMITTEES (Professional Standards)

HOWARD ROME
Coordinating Chairman
Liaison with American Academy of General Practice
ROBERT MATTHEWS
Liaison with American Hospital Association
R. W. WAGGONER
Mental Hospitals
JOSEPH BARRETT
Nomenclature and Statistics
HENRY BRILL
Private Practice
JOHN COTTON
Psychiatric Nursing
WILLIAM S. HALL
Psychiatric Social Work
NER LITTNER
Psychiatry and the Law
KENNETH G. GRAY
Relations with Psychology
JOEL S. HANDLER
Standards and Policies of Hospitals and Clinics
STEWART GINSBERG

STANDING COMMITTEES (Community Aspects)

PAUL LEMKAU
Coordinating Chairman
Academic Education
C. DOUGLAS DARLING
Disaster and Civil Defense
EDWARD J. KOLLAR
International Relations
LOTHAR KALINOWSKY
Leisure Time and Its Uses
ALEXANDER MARTIN
National Defense
BENJAMIN H. BALSER
Occupational Psychiatry
RALPH T. COLLINS
Preventive Psychiatry
HENRY WORK
Public Information
HENRY LAUGHLIN
Religion and Psychiatry
EARL A. LOOMIS, JR.
Veterans
SEYMOUR J. ROSENBERG

SPECIAL COMMITTEE

Certification of Mental Hospital Administrators
WINFRED OVERHOLSER

AMERICAN JOURNAL OF PSYCHIATRY

INFORMATION FOR CONTRIBUTORS

Manuscripts—The *original* manuscripts of papers read at the annual meetings of the Association should be deposited with the Secretary during the meetings, or sent to the New York office promptly afterward. Do not deposit carbon copies.

Papers read at the annual meetings become the property of the Association. Not all papers read, however, can be published in the JOURNAL, and authors wishing to publish in other vehicles will first secure from the Editor the release of their manuscripts.

Papers will not be accepted for the annual program if they have been previously read at other meetings or if they have been already published.

Papers contributed during the year (not on the annual program) should be sent to the Editor, Dr. Clarence B. Farrar, 216 St. Clair Avenue, West, Toronto 7, Ontario, Canada.

Style—Manuscripts should be typewritten, double spaced, on one side of the paper. They must be prepared in conformity with the general style of The American Journal of Psychiatry. Retain a carbon copy of manuscript and duplicates of tables, figures, etc., for use should the originals be lost in the mails.

Multiple Authorship—The number of names listed as authors should be kept to a minimum, others collaborating being shown in a footnote.

Illustrations—Authors will be asked to meet printer's costs of reproducing illustrative material. Copy for illustrations cannot be accepted unless properly prepared for reproductions. Wherever possible, drawings and charts should be made with India ink for photographic reproduction as zinc etchings. Photographs for halftone reproduction should be glossy prints. Illustrations should be as small as possible without sacrificing important detail. Redrawing or preparing illustrations to make them suitable for photographic reproduction will be charged to author.

Authors' Corrections in Proofs—Corrections, additions or deletions made by authors are to be charged to them. These alterations are charged on a time basis at the rate of $7.00 per hour. Proper editing of original manuscript is important to avoid the expense of correction.

Tables—Tables should be typed on separate sheets. Tables are much more expensive to set than text material and should be used only where necessary to clarify important points. Authors will be asked to defray cost of excessive tabular material.

References—References should be assembled according to author in a terminal bibliography, referred to in text by numbers in parentheses. Bibliographical material should be typed in accordance with the following style for journals and books respectively:

1. Vander Veer, A. H., and Reese, H. H.: Am. J. Psychiat., **95**: 271, Sept. 1938.
2. Hess, W. R.: Diencephalon. New York: Grune & Stratton, 1954.

Abbreviations should conform to the style used in the Quarterly Cumulative Index Medicus.

The American Journal of Psychiatry, formerly The American Journal of Insanity, the official organ of The American Psychiatric Association, was founded in 1844. It is published monthly, the volumes beginning with the July number.

Articles appearing in this Journal do not necessarily reflect the official attitude of The American Psychiatric Association or of the Editorial Board.

The subscription rates are $12.00 to the volume: Canadian subscriptions $12.50; foreign subscriptions, $13.00, including postage. Rates to medical students, junior and senior internes, residents in training during their first, second, or third training year, and also to graduate students in psychology, psychiatric social work, and psychiatric nursing, $5.00 (Canada $5.50). Single issues, $1.50. Copyright 1960 by The American Psychiatric Association.

Office of Publication, 10 Allen St., P.O. Box 832, Hanover, N. H.

Business communications, remittances and subscriptions should be addressed to The American Psychiatric Association, 10 Allen St., P.O. Box 832, Hanover, N. H., or to 1270 Avenue of the Americas, New York 20, N. Y.

Editorial communications, books for review, and exchanges should be addressed to the Editor, Dr. Clarence B. Farrar, 216 St. Clair Avenue, West, Toronto 5, Ontario, Canada.

Second class postage paid at Hanover, New Hampshire.

After a history and a physical ruled out organic disease, the physician diagnosed the case as recurring states of anxiety. To relieve these symptoms for this busy housewife, he prescribes Meprospan-400, the *only* meprobamate in *sustained-release* form.

As directed, the patient takes one Meprospan-400 capsule at breakfast. Her symptoms of tension and nervousness are soon relieved, and she will not have to remember to take another capsule until dinnertime.

Calm and relaxed, the patient is no longer upset by the pressures and irritations met in everyday life, nor is she likely to be incapacitated by autonomic disturbances, drowsiness, ataxia or other untoward reactions.

Alert and attentive, the patient participates in a P.T.A. meeting, following her second capsule of Meprospan-400 taken with the evening meal. Meprospan-400 does not decrease her mental efficiency or interfere with her normal activities or behavior.

Peacefully asleep, the patient enjoys beneficial rest . . . Meprospan-400 has relieved the tensions that previously prevented sleep or kept her tossing and turning throughout the night.

most widely prescribed tranquilizer . . .
most convenient dosage form . . .

ONE CAPSULE LASTS 12 HOURS

Meprospan®-400

400 mg. MILTOWN® SUSTAINED-RELEASE CAPSULES

Usual dosage: One capsule at breakfast lasts all day, one capsule with evening meal lasts all night. **Supplied:** Meprospan-400, each blue-topped *sustained-release* capsule contains 400 mg. Miltown. **Also available:** Meprospan-200, each yellow-topped *sustained-release* capsule contains 200 mg. Miltown. **For children:** Capsules can be opened and the coated granules mixed with soft foods or liquids.

Both potencies in bottles of 30.

Samples and literature available on request.

WALLACE LABORATORIES / *Cranbury, N. J.*

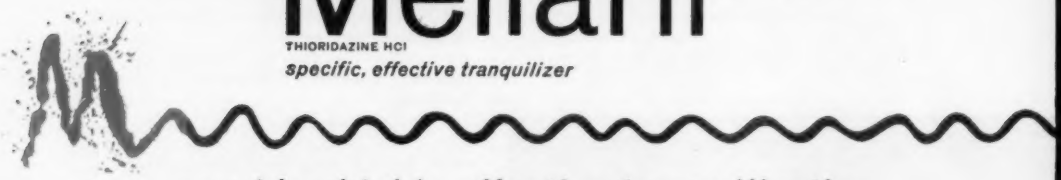
CME-3359

how does* Mellaril *differ from other potent tranquilizers?

Mellaril®

THIORIDAZINE HCl

specific, effective tranquilizer



provides highly effective tranquilization,
relieves anxiety, tension, nervousness,
but is virtually free of such toxic effects as

jaundice
Parkinsonism
blood dyscrasia
dermatitis

greater specificity of tranquilizing action results in fewer side effects

Virtual freedom of Mellaril from major toxic effects is due to greater specificity of tranquilizing action—divorced from such "diffuse" effects as anti-emetic action.

"Moderate to marked improvement in psychomotor behavior was obtained with Mellaril in 17 of the 22 cases in this series. In addition, there was complete elimination of extrapyramidal activity in 15 of 18 patients who had manifested Parkinsonian symptoms with the drugs previously employed. Our observations indicate that Mellaril is equally effective, or more so, than other phenothiazines in the treatment of various psychiatric disorders, but has a distinctly lessened tendency to induce extrapyramidal stimulation. In our experience, this is a significant contribution to the more effective management of larger numbers of disturbed patients."*

Supply: MELLARIL Tablets, 10 mg., 25 mg., 50 mg., 100 mg.

SANDOZ

*Khakee, A., and Hess, G. F.: Mellaril in the Treatment of Chronically Disturbed Patients: With Special Reference to Reduced Extrapyramidal Complications, Am. J. Psychiat. 116:1030 (May) 1960.

in your
depressed
patient

remove the depression with new
a true antidepressant

Nardil™
brand of phenelzine dihydrogen sulfate

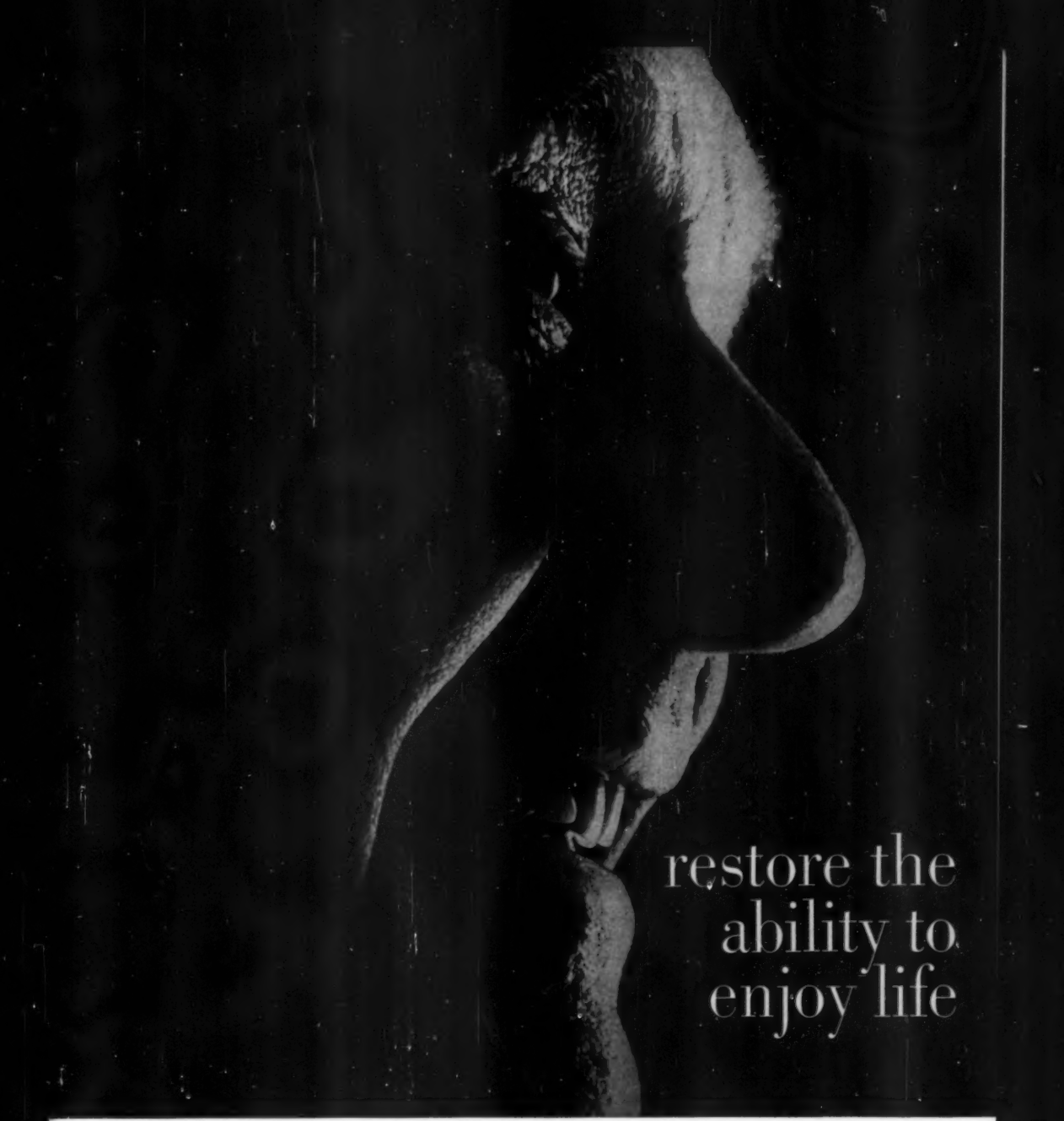
rapidly effective—antidepressant response often within a few days; complete remission usually within 2 to 6 weeks, in 4 out of 5 patients.[1-10]

low toxicity—no significant reports of toxicity to liver, blood or kidneys.[1-10]

corrective—helps remove the depression, rather than merely masking the symptoms... restores the mild-to-deeply depressed patient without institutionalization and without recourse to ECT in most cases.[1-10]

simple dosage—1 tablet 3 times a day.

NA PS01



INDICATIONS: Mild to severe depressions, depressions associated with chronic diseases such as angina pectoris and rheumatoid arthritis. Improves the depressed phase of affective (manic-depressive) psychosis, and relieves the depression of catatonic schizophrenics, although not affecting the psychosis *per se*. SIDE EFFECTS: Occasional postural hypotension and infrequent nausea, ankle edema, delayed micturition or constipation are managed by appropriate adjunctive therapy, or dosage reduction. DOSAGE: One tablet three times a day. After remission, reduce to a maintenance level of 1 or 2 tablets a day. SUPPLIED: Orange-coated tablets, each containing 15 mg. of phenylethylhydrazine present as the dihydrogen sulfate. Bottles of 100. CAUTION: Nardil should be withheld or used with extreme caution where the patient has a history of liver disease or liver damage is present. Hypotensive patients should be under close medical supervision.

REFERENCES: **1.** Sainz, A.: *Ann. New York Acad. Sc. 80*:780, Art. 3 (Sept. 17) 1959. **2.** Thal, N.: *Dis. Nerv. System 20*:197 (May, Pt. 1) 1959. **3.** Saunders, J. C., Kline, N. S., *et al.*: *Am. J. Psychiat. 116*:71, 1959. **4.** Arnow, L. E.: *Clinical Med. 6*:1573, 1959. **5.** Dickel, H. A., *et al.*: *Clinical Med. 6*:1579, 1959. **6.** Dunlop, E.: *Rhode Island M. J. 42*:656, 1959. **7.** Sainz, A.: *Dis. Nerv. System 20*:537, 1959. **8.** Sarwer-Foner, G. J., *et al.*: *Canad. M.A.J.* (in press) 1959. **9.** Hobbs, L. F.: *West Virginia M. J.* (in press) 1959. **10.** Dunlop, E.: *Dis. Nerv. System* (in press) 1959.

WARNER CHILCOTT
MORRIS PLAINS, N.J.

DRUG-INDUCED PARKINSONISM IS ON THE RISE,
reflecting the growing use of potent tranquilizers. These extrapyramidal disturbances may be reduced by lowering tranquilizer dosage.

***"It is almost always preferable, however, to merely add oral AKINETON®... since this avoids the risk of loss of therapeutic benefit and permits uninterrupted phenothiazine therapy."**

AKINETON®

BRAND OF BIPERIDEN

a prompt, specific countermeasure to drug-induced akinesia
motor restlessness · akathisia · torticollis · oculogyric crises · chorea

remarkably safe — "Akineton was not responsible for a single dangerous or toxic effect in the 500 patients treated."*

Dosage: Doses required to achieve the therapeutic goal are variable and individually adjusted. The following are average doses.

Drug-induced extrapyramidal disorders
1 tablet (2 mg.) one to three times daily

Parkinson's disease
1 tablet (2 mg.) three or four times daily

AKINETON hydrochloride tablets—2 mg., bisected, bottles of 100 and 1000.

*Ayd, Frank J., Jr.: Drug-Induced Extrapyramidal Reactions: Their Clinical Manifestations and Treatment with Akineton. Psychosomatics 1:143 (May-June) 1960.

KNOLL PHARMACEUTICAL COMPANY, ORANGE, NEW JERSEY

SAFER ELECTROSHOCK THERAPY

ultra-short-acting skeletal muscle relaxant 'ANECTINE'® brand

Succinylcholine Chloride

Injection 'ANECTINE' I.V.
60 Seconds After Injection
• patient relaxed • shock given
• modified clonic phase begins
90 Seconds After Injection
• modified clonic phase ends
180 Seconds After Injection
• normal respiration returns
(total time of shock procedure approximately 3 minutes average)

rapid relaxation rapid recovery

Comments from the literature:

"... method of choice."

Havens, L. L.: Dis. Nerv. System *19*:1 (Jan.) 1958.

"... recommend its use."

Impastato, D. J., and Gabriel, A. R.: Am. J. Psychiat. *114*:698 (Feb.) 1958.

"... treatment of choice."

Michael, K. D., and Wunderman, D. C.: J. Nerv. & Ment. Dis. *126*:535 (June) 1958.

"... irrespective of age."

Robie, T. R.: J. M. Soc. New Jersey *52*:82 (Feb.) 1955.

Complete literature available upon request.

'Anectine'® brand Succinylcholine Chloride
Injection: 20 mg. in each cc., multi-dose vials of 10 cc.

BURROUGHS WELLCOME & CO. (U.S.A.) INC., Tuckahoe, New York

The wonder of freedom in epilepsy

The score is Haydn. The reading difficult. The challenge exciting. And for the epileptic . . . the wonder of the freedom to be a part of this. Today, the five anticonvulsant drugs below offer you the privilege of giving the epileptic that most precious gift of all: a seizure-free life.

Anticonvulsants by Abbott: PEGANONE® (Ethotoin, Abbott) —A hydantoin of exceptionally low toxicity. Indicated for *grand mal* and psychomotor seizures. **PHENURONE®** (Phenacemide, Abbott)—Often effective when other agents fail. For *grand mal, petit mal,* psychomotor and mixed seizures. **GEMONIL®** (Metharbital, Abbott)—Relatively non-toxic. For *grand mal, petit mal,* myoclonic; mixed seizures symptomatic of organic brain damage. **TRIDIONE®** (Trimethadione, Abbott) **PARADIONE®** (Paramethadione, Abbott)—These exceptional homologous agents generally afford symptomatic control of *petit mal,* myoclonic and akinetic seizures.

ABBOTT

004214

There IS an answer . . . when COSTS are important!

THE BROWN SCHOOLS **for mentally retarded and emotionally disturbed persons from infancy to maturity***

- *Older retarded persons (21 yrs. and over)—$230 monthly tuition;
- Retarded children (infancy to 21 yrs.)—$230 to $280 monthly tuition;
- Emotionally disturbed children and adolescents (8-18 yrs.)—$280 monthly tuition plus $100 per month individual therapy.

Paul L. White, M. D., Medical and Psychiatric Director

For a detailed catalogue describing The Brown Schools in both text and photographs to:
Mrs. Nova Lee Dearing, Registrar
Dept. C-O • P. O. Box 4008
Austin 51, Texas

The Brown Schools

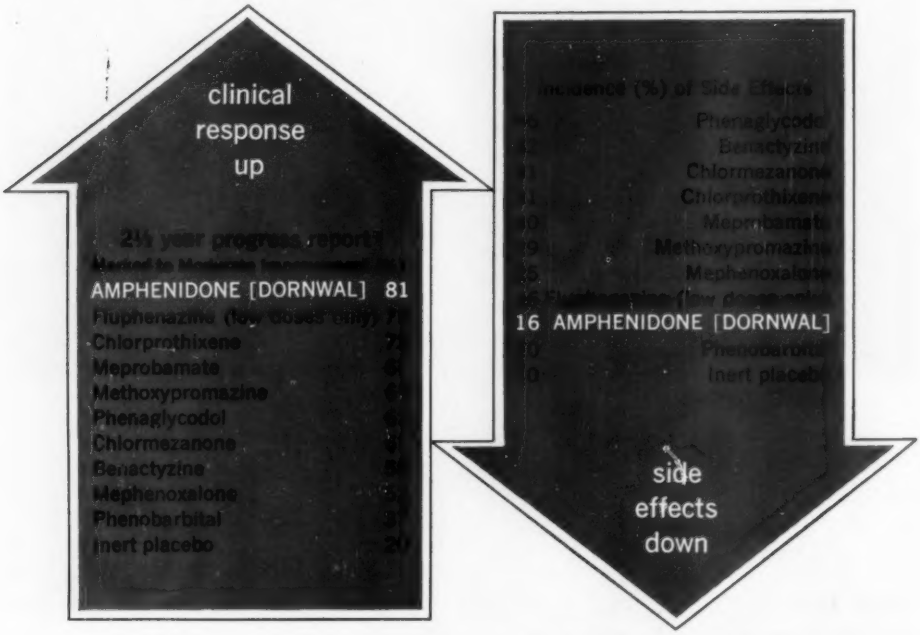
Austin and San Marcos, Texas • Founded in 1940 • Six separate resident centers

a nonsedative tranquilizer that works

DORNWAL®

(brand of amphenidone)

for greater therapeutic effectiveness in anxiety and tension with lowest incidence of side effects for the outpatient



Indications: Anxiety and tension states, tension headaches, pre- and post-operative apprehension, anxiety coexistent with gastrointestinal, dermatologic, gynecologic, cardiovascular and other functional or organic disorders, behavior disorders in children associated with anxiety and tension.

Dose: Adults, one or two 200 mg. tablets three times a day. Children, 6 to 16, one or two 100 mg. tablets two times a day. Administration limited to three months duration.

Supplied: 200 mg. yellow scored tablets, and 100 mg. pink tablets, each in bottles of 100 and 500.

*Nodine, J. H.; Bodi, T.; Slap, J.; Levy, H. A., and Siegler, P. E.: Human bioassay of tranquilizers in psychosomatic disorders, Scientific Exhibit, American Medical Association Annual Meeting, Miami Beach, Florida, June 13-17, 1960.

Maltbie Laboratories Division, Wallace & Tiernan Incorporated, Belleville 9, N. J.

Maltbie

PDW-06

PSYCHIATRIC AND MEDICOLEGAL IMPLICATIONS OF GENETIC AND ENDOCRINOLOGIC RESEARCH IN SEX DETERMINATION [1]

KARL M. BOWMAN, M.D., BERNICE ENGLE, M.A., AND MARJORIE MERGENER, A.B.[2]

In the last 3 years we have had a breakthrough in genetics and in sex determination which has greatly affected our understanding of and ways of treating a number of psychiatric conditions. This new knowledge of the human chromosomes has revolutionized some of our thinking. Until 3 years ago biologists thought that the human being had 48 chromosomes, but we now know that man has only 46(1). These chromosomes can be identified and counted only when the cell is dividing into two daughter cells. The ovum and sperm by processes of division lose one half of the 46 chromosomes and thus have only 23 (haploid). The other body cells have 46 chromosomes in the form of 23 pairs (diploid). In the ovum the 23rd chromosome is always an X chromosome; in the sperm cell it is an X half the time, a Y the other half. If the sperm cell has an X chromosome and combines with a normal ovum the resulting individual will be a normal female and the 23rd pair of chromosomes in each cell will be XX. Conversely a Y chromosome in the male will result in a normal male with an XY pair of chromosomes in each cell(2).

The fact that the sex of the newborn child is normally determined by the father and not by the mother is important to us as psychiatrists because the common misunderstanding has resulted in many women being blamed for bearing only girls. In some cases separation and divorce have resulted and in other cases women have developed severe depressions.

The problem of determining the sex of the newborn child is quite easy in the vast majority of cases but in a few cases differentiation is not easy and mistakes are made. Certain basic concepts are necessary in understanding this whole problem. In the first place no individual is completely masculine or feminine. Anatomically, physiologically and psychologically every individual has elements of both sexes. The normal testicle secretes estrogen (the so-called female hormone) and in the normal female the adrenal cortex secretes androgen (the so-called male hormone). The developing embryo remains sexually undifferentiated for about 48 days. Primary sex differentiation, as determined by the genetic sex, develops between the 48th and 57th days. From one primitive gonad, either the cortex will develop into an ovary while the medulla (center) will regress; or the medulla into testes, and the cortex regresses. Of the two ducts of the embryo, Wolff's duct develops into the male sperm duct, and Muller's regresses in the male; and Muller's duct develops into the fallopian tubes, uterus and upper vagina in the female, while Wolff's duct regresses. At about 60 days the external genitals are recognizably differentiated; and hormones are known to influence their development(3).

We thus see that the normal individual develops the sexual organs of his own sex and suppresses the development of the sexual organs of the opposite sex, although the residues of these undeveloped parts still remain in his body. Ordinarily all this is determined by the genetic factors we have mentioned and the characteristics of the 23rd chromosome in the sperm cell.

However, a number of things may happen to prevent his normal development as a clear-cut male or female. On a genetic basis the individual may have more of the attributes of both sexes. Even if there is no hereditary cause, several conditions in the

[1] Read at the 116th annual meeting of The American Psychiatric Association, Atlantic City, N. J., May 9-13, 1960.

[2] University of California, San Francisco Medical Center, San Francisco, Calif.

mother may adversely affect the development of the fetus including the sex development, for example, hormonal tumors; German measles, particularly during the first 3 months of pregnancy; exposure to x-ray; and hormonal treatment. The genetic sex of the individual is determined at conception, but factors may occur either before or after birth which modify the sexual development. Attempts therefore have been made to determine the genetic sex of the individual(3).

One test considered reliable within its limitations is the sex chromatin test. The most common way of performing this test is to make a buccal or vaginal smear, stain these cells and study them under the microscope. A stained mass of chromatin is clearly visible in up to 70% of the nuclei of normal female cells. This has been called chromatin-positive or female chromatin pattern. The chromatin mass is present in less than 6% of normal male nuclei and has been called chromatin-negative or male chromatin pattern. It was held that the chromatin-positive reaction indicated the presence of 2 X chromosomes and that the chromatin-negative indicated a lack of 2 X chromosomes(4). Recently this viewpoint has been abandoned and Barr, in a letter in the November 13, 1959, issue of *Science* states, "The precise relationship between the sex chromatin and chromosomes is an unsolved problem that challenges the resources of cytologists." Since in some writings *chromatin* studies are equated with *chromosome* studies, it is important to emphasize that these are two entirely different studies and that there is not the clear-cut relationship between the two tests which was thought to exist.

The final criterion is the actual viewing of the chromosomes. This test is a most difficult one and can only be done by comparatively few persons who have had a great deal of experience in this work. The cells in bone marrow or skin culture are arrested and held in a phase of mitotic division and are so treated as to allow each chromosome to be distinguished and the pairs to be identified. The normal individual will show 23 pairs of chromosomes; the last pair, the sex chromosomes, will distinguish the sex. An XX pair normally characterizes a female and XY, a male(5).

We now know that a number of variations in numbers and types of the chromosomes may occur with profound effects on the individual. The following table indicates possible variations of the sex chromosomes and the conditions that will result:

Possible Variations of Sex Chromosomes (23rd Pair)

	Both Chromosomes Normal	
1.	X-X	Normal Female
2.	X-Y	Normal Male
	Male Chromosome Abnormal	
3.	X-XY	Klinefelter Syndrome
4.	X-O	Turner Syndrome
	Female Chromosome Abnormal	
5.	XX-X	Metafemale
6.	XX-Y	(Same as 3.)
7.	O-X	(Same as 4.)
8.	O-Y	No Case Known
	Both Chromosomes Abnormal	
9.	XX-XY	No Case Known
10.	XX-O	Normal Female
11.	O-XY	Normal Male
12.	O-O	Probably Inviable and Early Abortion

We have listed 12 possible variations in the combinations of sex chromosomes and attempted to predict the results. Three of these have never been reported: numbers 8, 9 and 12. Some workers recently claimed that the sex chromosomes can be identified as coming from the male or from the female. We have accordingly drawn up these possible 12 combinations showing the female sex chromosome (or chromosomes) on the left and the male chromosome (or chromosomes) on the right. It will be noted that numbers 6 and 7 derived from abnormal female chromosomes yield the same final combination as do numbers 3 and 4 derived from abnormal male chromosomes. We will be interested to find out whether a process of differentiation between the female and male sex chromosomes will show that these conditions actually occur and whether this may even explain the fact that we do not always get the same chromatin pattern in all cases of Klinefelter's and in all cases of Turner's syndromes.

We have written to Dr. C. E. Ford of

England regarding these 12 different combinations and raising the question of two abnormal gametes combining; and referring to the mention by Hungerford, *et al.* of the possibility of an XXXY genotype (September 1959 issue of the *American Journal of Human Genetics*). Dr. Ford was also asked if he would care to speculate as to the likelihood that homosexuals, transvestites and complete sex inverts might belong to any of these abnormal groups. Dr. Ford was kind enough to answer our letter as follows :

COPY

MEDICAL RESEARCH COUNCIL
RADIO BIOLOGICAL RESEARCH UNIT
Harwell,
Didcot, Berks.
23rd November, 1959

Dear Dr. Bowman :

Thank you for your letter of November 12th. The XXX female type has now been identified. Only one case has been found as yet and this was reported in a recent issue of the *Lancet* (September 26th.) by Jacobs and her colleagues at Edinburgh.

You are quite right regarding the possible occurrence of the 4 additional forms : I did not mention them because their expected incidence would be so low. Actually the XXO and XYO types should become normal female and male respectively. The OO type I would confidently expect to be inviable and to lead to early abortion. On the other hand the XXXY type might well be viable although, of course, very infrequent indeed. If it *did* occur it would be a most interesting case indeed from the point of view of sex chromosome balance.

As you will read in the account of the XXX case the patient had no striking abnormality and it occurs to me that there may well be many more such cases at large in the general population. After all, if XX eggs fertilised by Y sperm make any considerable contribution to the incidence of Klinefelter's syndrome (chromatin positive)—the evidence of Nowakowsky and his colleagues suggests that they do—there should be an almost equal number of XX eggs fertilised by X sperm to give XXX individuals. As to the likelihood of the XXX cases or the anticipated very rare XXXY cases behaving as homosexuals or transvestites I do not think that present evidence provides sufficient basis for offering an opinion.

I fear that what I have said in this letter may not be of very much value but if you wish to quote anything I have said by all means do so.

Yours sincerely,
s/ C. E. Ford

We now understand a number of conditions and can treat them effectively. Two conditions have been regarded as sex transformations : Klinefelter's and Turner's syndromes. Klinefelter's syndrome is that of a sterile male usually with some degree of gynecomastia and with small testes. In most cases he can have erections, ejaculations and a normal sex life. Some are eunuchoidal males ; a minority also have gynecomastia. A number of these patients have been discovered only because they sought medical advice about infertility. Many patients with Klinefelter's syndrome were thought to be genetic females who had been transformed into imperfect males. This was due to the fact that this group (contributing about two-thirds of the cases of Klinefelter's syndrome) had a positive chromatin pattern (incorrectly called "female chromatin pattern"). The study of chromosomes has, however, cleared this up. These cases have 47 chromosomes, the 23rd pair has an additional X so that the combination is XXY(6). Klinefelter's syndrome therefore is no longer considered a case of sex reversal from a female into an imperfect male, but as a condition in which a male has developed imperfectly because of a chromosomal abnormality. It is associated with other congenital anomalies, of which mental retardation and renal abnormalities are the most common.

Two cases of chromatin-positive Klinefelter's syndrome with characteristic symptoms were reported in identical male twins with 9 normal siblings(7). At age 15 both boys, eunuchoid in appearance, failed to develop male secondary sex characteristics and Twin A's breasts began to enlarge. Testicular biopsy on Twin A, who had had nocturnal emissions, showed some spermatogenic activity; none had occurred in Twin B. The first twin underwent plastic surgery on his enlarged breasts, preceded and followed by testosterone therapy. He showed no interest in girls and his "behavior impressed several observers as effeminate." Twin B's personality pattern "revealed anxiety and fear associated with an awakening sexuality."

Turner's syndrome is the reverse of this. The syndrome is usually characterized by failure of the ovaries and of secondary sex characteristics to develop and other congenital anomalies including shortness of stature and webbing of the neck. Some variations in the symptoms have been seen. Breast development, spontaneous menstruation and ovarian development have been reported(8). Girls with this condition, as far as known, are always sterile. About 80% of these cases are chromatin-negative and this led to the concept that they were males changed into imperfect females. We now know that the condition is often associated with a lack of the Y chromosome so that in this group the individual has only a single X chromosome and it is represented as XO instead of the diploid XX which the ordinary female has. According to Ford and coworkers "she is a female with an abnormal genotype."

An atypical case of chromatin-negative Turner's syndrome was followed at the University of California Hospital for over 10 years. Though her parents and 2 sisters were normal, the girl, born in 1945, had a rudimentary uterus, atrophic ovarian tissue, a webbed neck and other stigmata of Turner's syndrome. At age 12 some pubic hair appeared but at age 15 her appearance was still that of an extremely short, sexually immature girl. Pituitary growth hormone to encourage maximum growth was given and estrogen therapy planned. The pediatrician frequently consulted the parents about the patient. When the patient was 13 she and her mother were seen individually for 6 hours of psychotherapy by the University of California pediatric mental health unit over a 6-week period. While at first described as somewhat antisocial, belligerent and sensitive about her size, she expressed her desire during the therapy to be a bride and a mother, or a nurse or nun. After psychotherapy the patient was described as apparently happy and socializing well.

We conclude, therefore, that legally a patient with Klinefelter's syndrome is a male and that it is psychologically important for him to consider himself a male and for those about him to do so. Treatment may consist of bilateral simple mastectomy best performed by a skilled plastic surgeon and, if eunuchoidism is present, administration of androgens. A patient with Turner's syndrome is legally a female and it is likewise important for the patient and others to consider her a female. Turner's syndrome may be treated by the cyclic administration of estrogens to stimulate the growth of female secondary sex characteristics and to produce some uterine bleeding. A few patients have menstruated spontaneously. A psychiatric evaluation should be done in all cases and psychiatric treatment is frequently indicated. A legal consideration might be the question of annulment or divorce if the individual knew at the time of marriage that he or she was sterile.

Another interesting condition is the metafemale(9), sometimes called superfemale, which is associated with an XXX set of sex chromosomes so that the individual has a total of 47 chromosomes. Only one case has been reported to date(10), a 35-year-old woman sexually underdeveloped who stopped menstruating at the age of 19. She had infantile external genitals, underdeveloped breasts, and a high (71%) proportion of chromatin-positive cells. She was of below normal intelligence.

A possible variation would be the individual born by parthenogenesis, or virgin birth. It is recognized that this can occur in other mammals, fatherless rabbits having been experimentally produced (Pincus)(11). It does not appear inherently impossible in man. If such a condition did occur there would possibly be a haploid nuclear structure with only a single set of chromosomes, including only a single X chromosome. Such an individual would be female in apparent sex and would presumably be sterile. It would be possible to determine such an individual by two tests : only blood groups derived solely from their mothers would be found and a skin graft from the daughter to mother should survive. Attempts have been made, particularly in Great Britain, to find such haploid individuals but careful examinations have always indicated that the cases under study were not the result of parthenogenesis (Platt, Stratton)(12). However, Pincus points out that parthenogenesis in rats with production of haploid offspring, does not result in any viable progeny. All his rabbits that survived had diploid nuclear structure.

He concludes from this: "Evidently the formation of a double set of chromosomes is essential to produce even an approximation of normal parthenogenetic development."

Although cases of eunuchoidism are usually correctly identified as to sex, it seems that a brief discussion of this condition should be given. A whole group of individuals, both male and female, are imperfectly developed sexually and at puberty fail to develop the normal secondary attributes of their own sex. One of the most frequent causes is a failure of the pituitary gland to secrete the sex stimulating hormones. Another is failure of the gonads to function normally. The condition occurs occasionally in families but in some cases it is not known whether the defect was of the gonads or of the pituitary gland. Biben and Gordan (13), however, report 5 instances of eunuchoidism of pituitary origin in two families in which sex hormone treatment successfully produced genital development. Some boys with undescended or partially undescended testicles may respond quite fully to endocrine treatment and their testicles will then descend. In eunuchoid males the penis is commonly very small. Many of these boys show marked disproportionate growth in their long bones (arms and legs). Eunuchoid girls are likewise tall and usually continue to grow beyond the normal age. In the girls the uterus fails to mature and at puberty other sex characteristics do not develop. Again, the appropriate sex hormones bring about normal maturation in almost all cases.

While the cause in most cases of sexual precocity is unknown, congenital adrenal hyperplasia, the same genetic defect which produces female pseudohermaphroditism, often produces premature sex development in boys. Hypothalamic tumors produce this condition in both sexes and other known causes are tumors of the ovary in girls or tumors of the testis, adrenal cortex or the pineal in boys. It can start as early as 2 years and develop rapidly, with puberty attained before age 9 or 10.

These children offer various medicolegal difficulties. The sexually precocious boy may be kept out of school because parents fear to have their children associate with him. The sexually precocious girl may become pregnant at a very early age, like the Peruvian(14) girl, who began menstruating at 8 months and at 5½ years gave birth by Caesarean section to a 6-pound boy.

A fraternal twin boy, with a normal sister, was hospitalized at the University of California Hospital and at Langley Porter Neuropsychiatric Institute intermittently over a 3-year period because of his sexual precocity, for which no cause was found. Sexual development began at one year; by age 6½ he was sexually mature and his bone and hormonal ages were well into adolescence. Though his IQ was substantially below normal, the psychologist emphasized that his retardation could be a result of his earlier enforced isolation, when his mother, under neighborhood pressure, fenced him in a 4′ x 10′ yard. The public school refused to keep him because of his boisterousness, and his mother was unable to handle him without his father, who had left the home. At that time the patient was hospitalized 6 months at Sonoma State Hospital for observation and transferred to Langley Porter Neuropsychiatric Institute for treatment.

The boy, a lively, boisterous and sometimes destructive child, improved in his relationships with the doctors and other personnel, probably the result of psychotherapy. Even at the hospital, however, he was sometimes treated more like an adolescent than a boy age 6½. After 3 months his mother decided to take the patient home and at the latest report he was attending school apparently with success.

These children, though they may look like adolescents, are still children to be treated as such; usually they are not oversexed, but merely prematurely developed. By puberty their growth will have stopped so that by age 18 they are actually shorter than most boys and girls of their age. If these children are handled intelligently during the period of precocity, they should become normal, though short, adults.

Mistaken identification of the infant's sex may occur commonly in pseudohermaphroditism and in true hermaphroditism. Female pseudohermaphrodites have ovaries, with some male characteristics. The female complex of chromosomes is apparently normal; but an excessive secretion of androgens, most commonly from the overdeveloped fetal adrenal cortex before birth,

is one factor in causing the male characteristics.

In adrenal cortex overdevelopment, caused by a recessive gene, according to Grumbach and Wilkins(15), the infant may or may not be recognized at birth as a female. As virilism progresses, the clitoris enlarges to resemble a penis, body hair appears early, and at puberty a beard grows and the voice deepens, but breasts and menses do not develop. Crew(16) cites evidence to strongly suggest that 1 in every 400 males is "in fact a completely masculinized female."

With the discovery of cortisone in 1950, which suppresses the excessive secretion of androgen by the adrenal cortex, the individual treated in the early stages can develop into an essentially normal female and virilism is thus prevented. Normal pregnancies in women with congenital virilizing adrenal hyperplasia who were treated with cortisone have been reported. There is no theoretical reason why such pregnancies cannot occur in these women if their condition is treated.

A female pseudohermaphrodite with adrenal hyperplasia raised as a boy was followed at the University of California Hospital. The child, born in 1946, appeared essentially female except for a large clitoris which continued to enlarge and vulva which grew to resemble a scrotum. Her parents decided to raise her as a male and the necessary surgery was performed. By age 8 the child's breasts had begun to develop, 3 or 4 episodes of vaginal bleeding had occurred and the kidneys had become inflamed several times. A panhysterectomy was performed after consultation with the parents, who still wanted to raise the child as a male. In 1957 the child was described as a feminine-like boy of slender build. A year later the whole family was seen by the pediatric mental health unit for a course of psychotherapy; in 1959 the child was described by the father as "all boy." His doctor noted at that time that he was dating and was interested quite normally in girls.

Lisser and Escamilla(17) reported the case of a boyish-looking muscular child with abundant pubic hair and thick, protruding phallus (really an enlarged clitoris), first seen at the University of California at age 3. At birth, because of the confusion about sex assignment, the child had been registered as a male. The cell chromatin pattern was positive; an exploratory operation showed a normal-appearing uterus, tubes, ovaries and a rudimentary vagina. The parents then decided to raise the child as a girl and changed the masculine name to a feminine one. Cortisone therapy was begun and surgical construction of a functioning vagina was planned. At last report, efforts to legally change her name were being made.

Rosenwald, *et al.*(18) administered psychological tests before and after clitoridectomy, to 5 female pseudohermaphrodites, one of whom had been raised as a boy, up to the time of surgery. None of the children showed significant psychopathology before or after surgery, including the child whose sex was changed. In this case both the mother and the child had been seen in psychotherapy and the family unit appeared to be stable.

Male pseudohermaphrodites have female characteristics in varying degrees, from a small phallus and some degree of breast development, to the extreme of appearing as a normal, though non-menstruating woman, with breasts, external female genitalia and vaginal canal (usually a pouch), but often with sperm ducts. The excessive secretion of estrogen by the testes in the abdominal cavity or in a hernial sac causes feminine development. The high familial incidence of this condition suggests a genetically determined disorder. Because of the danger of malignancy the testes should be removed.

Goldberg and Maxwell(19) reported probably the best-known case of testicular feminization which occurred in a healthy, apparently normal girl of 19 years who came to the University of California Hospital complaining of amenorrhea. The girl had abnormally long arms and legs, conspicuously large breasts, small, though normally formed, external genitals, a short vaginal canal and a clitoris which was only a dimple. Sex hair was absent. She was described as an affectionate person who enjoyed the attention of men, but who had always felt herself somehow different from other girls. Since the patient planned to marry and wanted plastic surgery, exploratory surgery was performed and two gonads identified as testes were removed. Following the operation she was described as "more than ever anxious for marriage" and "cheerful, happy and full of vitality." At last report the patient had been married, divorced and remarried.

The true hermaphrodite has elements of both sexes, both testicular and ovarian functioning tissue, but not active sperm and egg cells. So far, as reported, no evidence of chromosomal imbalance has been found. Two instances of two true hermaphrodites in the family support the theory of a genetic cause. Money and coworkers(20) studied 12 cases of true hermaphroditism and found a chromatin-positive pattern in 8, a chromatin-negative in 4.

Historically, these persons were in many countries allowed to decide on their sex but must thereafter stick to their decision. The commonsense way is for the physician to consult with the parents and arrange for necessary surgical and medical measures.

True hermaphroditism in siblings apparently male was reported by Clayton, *et al.*(21). The 2 boys, age 16 and 7, had chromatin-positive cell nuclei, complete hypospadias without cryptorchidism, and the older one had normal male puberal changes except for small and insensitive testes. In the older boy a biopsy showed that the testes contained ovarian tissue; scrotal exploration and testicular biopsy on the younger child also showed ovarian tissue. Except for the congenital abnormality of his penis, which was repaired at 4 years, and a eunuchoid body build, the 17-year-old was in excellent general health and development and was said to be a psychologically well-adjusted male. The younger boy was also in good general health and showed normal growth and development. The authors concluded that the identical gonadal differentiation of the siblings proved the defect to be of genetic origin. The children had a normal 12-year-old brother and no other familial instances of abnormal sex development could be found.

All this is of great interest to psychiatrists because the finding of individuals who were conceived as members of one sex and developed into the opposite sex may offer grounds for all sorts of further study. Questions have been raised as to whether homosexuals might belong to one of the groups of intersexuality. Attempts have been made to link up the sex chromatin pattern with the sex behavior. The few studies made so far do not show, however, that male homosexuals tend to have a chromatin-positive pattern, nor do female homosexuals tend to have a chromatin-negative pattern.

Some transvestites claim to have no homosexual desires and have never engaged in homosexual acts; others vary from ambisexuality to complete homosexuality. A few are commonly called cases of complete inversion or transsexualism. A study, by Barr and Hobbs(22), of 5 male genuine transvestites showed the nuclei of a typical chromatin-negative pattern, and it was therefore "inferred that these persons bear the male XY sex-chromosome complex." Two Czechoslovakian investigators, Raboch and Nedoma(23), found that 35 of 36 men with a chromatin-positive nuclear pattern had underdeveloped testicles. They then examined 9 men with underdeveloped testicles from a group of 194 homosexuals. They concluded, since 6 of the 9 had a chromatin-negative pattern, that a chromatin-positive pattern in homosexual men would be coincidental, not causal; and that testicular androgens were the prime factor affecting "the development and course of sex life . . ." Davidson and Winn(24) conclude that "chromosomal factors play little part, certainly in transvestism and homosexuality, and the nuclear sex is not at variance with the anatomical sex in the vast majority of cases . . ." They cite, in addition to the 2 sources quoted above, a study by Wiedemann.

It is also of interest that some pseudohermaphrodites have been raised as members of the unpredominant sex. Careful studies by Money, *et al.*(25) indicate that individuals over age 2 are likely to have great difficulties if attempts are made to change the sex role. In their excellent articles they point out 7 factors to be studied in deciding to which sex an individual should be assigned. These are:

1. Assigned sex and sex of rearing
2. External genital morphology
3. External accessory reproductive structures
4. Hormonal sex and secondary sexual characteristics
5. Gonadal Sex
6. Chromosomal Sex

Patients showing various combinations and permutations of these 6 sexual variables

may be appraised with respect to a 7th variable :

7. Gender role and orientation as male or female, established while growing up.

From their studies of over 100 cases they concluded that by about age 2 the individual has identified himself clearly as a member of one sex or the other, and it is usually disastrous to attempt any change after that identification has occurred. They recommend, "in the case of neonatal and very young infant hermaphrodites . . . that sex be assigned primarily, though not exclusively on the basis of the external genitals and how well they lend themselves to surgical reconstruction in conformity with assigned sex," and possible endocrine treatment.

On the other hand, Rosenwald, *et al.*(18) from their observations of sex change in a 6-year-old female pseudohermaphrodite raised as a boy and other cases followed in their clinic, stated that "under favorable circumstances change of sex can be made after the establishment of gender role without resulting in a confused patient inevitably destined to severe emotional disease." Psychological disturbances were considered not inevitable, but a result of an inherent weakness in family structure. Although reassignment of sex is inadvisable in any hermaphrodite beyond the infantile age period, female pseudohermaphrodites with adrenogenital syndrome who have been reared as boys, because of an original diagnostic error, "should be individually evaluated with regard to possible change of sex assignment."

Cappon and coworkers(26) list 6 variables of sex : genetic (chromosomal) ; gonadal ; endocrinological ; body habitus (appearance) ; genitals ; and secondary sex characteristics. Since they emphasize the close correspondence between the psychological and the body sex, one may infer that the individual conforming to 4 of the 6 equally weighted criteria for one sex would be assigned to that gender role. This method has been much criticized.

Stoller and Rosen(27) stated that neither the somatic sex nor the early identification of the patient with one sex is all important. "The essential criterion is the strength of the patient's identification with one sex or the other." Two British writers, Davidson and Winn(24), consider that, within certain limitations, nuclear sexing indicates the genetic and gonadal sex and is useful in assigning the individual to a suitable sex role, but often the anatomical sex and the mental outlook "are even more important factors in making a wise decision."

In our opinion, no laws should be at present enacted regarding the sex determination of pseudohermaphrodites or true hermaphrodites. In the case of a young child, the physician should decide on the basis of medical knowledge and the family's wishes ; the patient himself should be consulted if old enough. It is better to leave the lawbooks uncluttered with specific statutes and to leave room for the use of medical advances and the physician's judgment.

Summary and Conclusion

This paper has discussed some of the latest discoveries in genetics and in endocrinology and their psychiatric significance. We now know Mongolian idiocy is due to an abnormal condition of the 19th alleles and that it may be associated with Klinefelter's syndrome. It seems likely that a whole series of psychiatric conditions will soon be linked up with disorders of the chromosomes. We realize the importance of the sex hormones. Both the androgens and estrogens are composed of numerous different substances. We do not know the potencies of each one of them nor have we adequate knowledge to correctly quantitate some of them. These are only two of many illustrations that might be given. This spectacular breakthrough is just beginning and the next 10 to 20 years will see still greater additions to our knowledge.

After this paper was presented, a basic question was raised by two articles(28, 29) in *Lancet* for July 16, 1960. The first article reported 2 cases of true hermaphroditism. "The basic diploid chromosome number in each is 46 and the sex chromosome constitution is interpreted as XX. In one patient 18.5% of cells had a chromosome count of 47. Despite the presence of a testis in one case and an ovotestis in the other, no Y chromosome was present." The second article reported one case of true hermaphroditism with 46 chromosomes and "the chromo-

somal constitution was found to be XX, indicating female sex." It cites 2 articles published a few months previously, each of which reported one case of true hermaphroditism with the sex chromosomes being XX. All this material raises a basic question as to whether the Y chromosome is necessary for the presence of a testis or an ovotestis.

BIBLIOGRAPHY

1. Roberts, J. A. : An Introduction to Medical Genetics. London : Oxford Univ. Press, 1959.

2. Grumbach, M. M., Barr, M. L. : Cytologic tests of chromosomal sex in relation to sexual anomalies in man. *In* : Recent Progress in Hormone Research (G. Pincus, ed.). N. Y. : Academic Press, 1958, p. 225.

3. Witschi, E., Nelson, W., Segal, S. J. : J. Clin. Endocrin. & Metab., **17** : 737, June 1957.

4. Ford, C. E., Jacobs, P. A., Lajtha, L. G. : Nature, **181** : 1565, June 7, 1958.

5. Ford, C. E. : New Scientist, **6** : 405, Sept. 10, 1959.

6. Ferguson-Smith, M. A., Lennox, B., Mack, W. S., Stewart, J. S. : Lancet, **2** : 167, July 27, 1957.

7. Holub, D. A., Grumbach, M. M., Jailer, J. W. : J. Clin. Endocrin. & Metab., **18** : 1359, July 1958.

8. Spence, A. W., Havard, C. W. : Brit. M. J., **5162** : 1288, Dec. 12, 1959.

9. Stern, C. : Lancet, **2** : 1088, Dec. 12, 1959. Lennox, B. : Lancet, **1** : 55, Jan. 2, 1960.

10. Jacobs, P. A., Baikie, A. G., Court Brown, W. M., MacGregor, T. N., Maclean, N., Harnden, D. G. : Lancet, **2** : 423, Sept. 26, 1959.

11. Pincus, G. : Sc. Am., **184** : 44, Mar. 1951.

12. Platt, R., and Stratton, F. : Lancet, **2** : 120, July 21, 1956.

13. Biben, R. L., and Gordan, G. S. : J. Clin. Endocrin., **15** : 931, Aug. 1955.

14. Lisser, H., and Reilly, W. A. : The gonads. *In* : Endocrinology in Clinical Practice. Chicago : Year Book Publishers, 1953, p. 255.

15. Grumbach, M. M., and Wilkins, L. : Pediatrics, **17** : 418, Mar. 1956.

16. Crew, F. A. : Practitioner, **183** : 178, Aug. 1959.

17. Lisser, H., and Escamilla, R. : *In* : Atlas of Clinical Endocrinology. St. Louis : C. V. Mosby Co., 1957, p. 246.

18. Rosenwald, A., Handlon, J., Rosenthal, I. M., Hyde, J., and Bronstein, I. P. : Pediatrics, **21** : 832, May 1958.

19. Goldberg, M. B., and Maxwell, A. F. : J. Clin. Endocrin. & Metab., **8** : 367, May 1948.

20. Money, J., Hampson, J. G., and Hampson, J. L. : Bull. Johns Hopkins Hosp., **97** : 301, 1955.

21. Clayton, G. W., Smith, J. D., and Rosenberg, H. S. : J. Clin. Endocrin. & Metab., **18** : 1349, Dec. 1958.

22. Barr, M. L., and Hobbs, E. : Lancet, **1** : 1109, May 29, 1954.

23. Raboch, J., and Nedoma, K. : Psychosom. Med., **20** : 55, Jan.-Feb. 1958.

24. Davidson, W., and Winn, S. : Postgrad. M. J., **35** : 494, Sept. 1959.

25. Money, J., Hampson, J. G., and Hampson, J. L. : Bull. Johns Hopkins Hosp., **97** : 284, Oct. 1955.

26. Cappon, D., Ezrin, C., and Lynes, P. : Canad. Psychiat. A. J., **4** : 90, Apr. 1959.

27. Stoller, R. J., and Rosen, A. C. : Calif. Med., **91** : 261, Nov. 1959.

28. Ferguson-Smith, M. A., and Johnston, A. W. : Lancet, **2** : 126, 1960.

29. De Assis, L. M., Epps, D. R., and Boltura, C. : Lancet, **2** : 129, 1960.

THE COMMON FRONTIERS OF PSYCHIATRY AND LAW [1]

HAROLD D. LASSWELL, PH.D.,[2] AND LAWRENCE ZELIC FREEDMAN, M.D.[3]

We want to discuss those regions of personal distress and public disorganization which lie within the necessary and legitimate boundaries of both psychiatry and law and which are not yet fully explored. In the spirit of our title we will seek to identify and corral some of the common problems now ranging tantalizingly outside the borders of scientific law and social order. Later we will suggest a structure within which this initial foray may be extended in time and in legal, psychiatric and political significance.[4]

After tentative and rather slow beginnings, American universities are in the midst of rapidly expanding programs of collaborative undertakings between psychiatry and law. Mainly, these are concerned with the initiation and development of courses for the training of law students in the elements of psychiatry and behavioral science as they apply to the law. Several law schools including Yale(1), the University of Pennsylvania(2), the University of Chicago(3), Temple University(4) and other academic centers are now experimenting with teaching methods and preparing teaching material for this purpose(5). Less advanced are plans for programs of joint research. Already, however, a few research units in psychiatry and law have been organized and new ones are in prospect. Our emphasis today will be on implementation of this phase of the collaborative efforts(6).

It is our thesis that, hopeful as are the beginnings which have been made in law schools and departments of psychiatry in our country—even in anticipation of their future contributions—no program thus far undertaken or planned is responsive to the range, significance and urgency of the problems involved. We therefore propose that this national problem, affecting as it does our most essential personal and community interests and values, must be approached on a commensurate scale.

It is appropriate, therefore, to review some of the experience we have already gained in joint ventures of this kind, and to propose a map that provides a sketch of what appear to be the lines of special promise. In so doing we shall perforce give some attention to the value assumptions and goals of the professional groups involved, and consider the proposed alternatives in the light of developing trends and projections, and of behavioral and psychiatric findings to date. We will suggest how these trends may be fused in a research institute for carefully planned and integrated long-range investigation into these common problems.

Although the range of challenging questions is enormous it is encouraging to be able to say that some collaborative work has already led to discernible results. The new intermingling of research-minded lawyers and psychiatrists is producing a common frame of reference whose potential significance for mental health as well as for community policy is far-reaching. We shall presently refer to some representative bits of research; but it would give a distorted image of these developments to lay too much stress upon present contributions.

In an earlier symposium with us, our late colleague, Professor George Dession(8, 9, 10), a pioneer in the collaboration of psychiatry and law, succinctly epitomized our common interests as being concerned with the "two areas of social process in which individuals seem to experience exceptional difficulties in the pursuit of their objectives."

The psychiatrist is rare who does not, very soon after he undertakes treatment, discover a not insignificant range of unde-

[1] This paper was written with the assistance of the Foundations Fund for Research in Psychiatry. Read at the 115th annual meeting of the American Psychiatric Association, Philadelphia, Pa., April 27-May 1, 1959.

[2] Professor of Law and Political Science, Yale School of Law.

[3] Fellow, Center for Advanced Study in the Behavioral Sciences, Stanford, California, and Department of Psychiatry, Yale Medical School.

[4] We wish to acknowledge the stimulation of discussions with members and consultants of the Committee on Psychiatry and Law of the Group for Advancement of Psychiatry while Professor Lasswell was Consultant and Dr. Freedman was chairman.

tected illegal activity, not merely fantasied or anticipated but actually carried out by his patients, including those who come mainly from ostensibly conformist middle and upper class groups. And, indeed, only the most insensitive lawyers and counsellors remain unaware for long that legal actions undertaken by or against many of their clients are reflections of essentially psychiatric problems. These could be treated most efficiently and justly with a proper and adequate understanding of the sub-legal and sub-rational conflicting motivations expressed by them. Legal organizations may be the principal recruiting agency of psychiatric patients from the depressed socio-economic groups. In an eastern state about one quarter of the patients from the most socially and economically deprived groups who had been seen by psychiatrists had arrived there through the intervention of police or the courts. Further, the psychopathological symptomatology of this group was likely to be expressed in deviant or provocative interaction with the community (11, 12). If we thus combine the social impact of the lower class patients who act out their psychopathology so as to be caught and labelled "criminals" with our more socially favored patients whose preconscious antisocial tendencies invade the social fabric more insidiously but more effectively, the significance of this frontier of common legal-psychiatric concern becomes self-evident(13, 14).

The broad scope of research in the field of psychiatry does not need to be dwelt upon. All manifestations of mental disease are its province, and its investigation probes into the problems of individual and collective diagnosis, prognosis, and therapy and searches in particular for the factors affecting the etiology and course of the disease process. As a physician, the psychiatrist's dominant articulate value is life and health. There are, however, social demands upon him concerning which the profession is far from of one mind, or comfortable. These range from the question of the use of his knowledge for purposes of crime detection (*e.g.*, narcosis ; hypnosis) (15, 16, 17), to its use for inter-nation destructive purposes, for example, psychological and biological warfare. Somewhere intermediate is the problem of their implementation with the aim of promoting or achieving less debatable social or national political goals.

Several psychiatric projects are already engaged in gathering data about the frequency of occurrence in communities of various size and composition not only of neurotics, psychosomatic cases, and psychotics(17, 18), but also of psychopathic characters--the recidivist criminals of our culture. Psychiatrists have participated to a very limited extent up to the present in the study of the first steps that often lead to full-scale court action in juveniles and adults.

As a biologist and medical specialist, the psychiatrist was early concerned with those organic changes which might catapult an individual into psychopathology of a personally distressful or socially harmful nature. Organic causes range from feeblemindedness on an anatomic or physiological basis to brain disease, toxicities, physical degenerative changes, and psychosomatic illness arising from predominantly psychic stimuli. Certain tentative studies would seem to indicate that there are empirically observable and measurable correlations between physical illness and social delinquency(19). Reports of those careful and able investigators, the Gluecks(20, 21), indicate a positive correlation between particular body types and incidence of juvenile delinquency. Intensive and specialized investigation into these somatosocial delinquencies would therefore appear to be one of the proper functions of the psychiatric member of a research team concerned with antisocial behavior.

Many of the conventional techniques and areas of psychiatric research lend themselves with little distortion to investigation of these compelling social psychiatric questions. For example, the wards of a mental hospital can provide rich opportunities for the investigation of power operations, loci of decision-making, and factors affecting those decisions which may have profoundly deprivational impacts. Not only learning and rewarding techniques, but also retribution, imposition of deterrents, and efforts at rehabilitation (the classical triad of criminal law) are applied daily in large mental hospitals. On the side of the

patients, this interaction involves a wide variety of character types and of symptomic deviation. On the side of the doctors, who act as judging and decision-making figures in these hospitals, there is a comparably broad range of personalities, motives, and objectives. Stanton and Schwartz(22) Caudill *et al.*(23) and others have already made important preliminary observations; thus enough empirical data exist for the development of relevant and heuristically promising hypotheses. There are sufficient opportunities in the course of the daily hospital activities for "experimental" observations of the effect upon future behavior of decisions which implement either punitive or rewarding responses.

The focus of legal research is the community-wide process of authoritative decision. *For argumentative purposes* research has the relatively modest role of discovering precedents or "facts" likely to influence the judgment of tribunals. *For scientific purposes* the "arguments" and the "facts" become part of the phenomena to be explained. What factors account for the acceptance or rejection of proposed statutory prescriptions by the legislature or the electorate (*e.g.*, fluoridation) (24)? For the invocation or failure to invoke a provision in the formal code on the part of law enforcement officers (*e.g.*, blue laws)? For the acceptance or rejection of interpretations by administrators, courts, juries (*e.g.*, the doctrine of the *Durham* case)(26)? The effect of formal requirements upon conduct, and especially of sanctioning measures (*e.g.*, recidivism)?

Within traditional legal court and pedagogical procedures, there exists ready-made opportunity for research. For example, law schools frequently adopt a role-playing procedure as a training device which, to a remarkable degree, succeeds in integrating the factual context of an actual or hypothetical case with freedom of interpersonal interplay. Such so-called moot court cases, properly studied by qualified teams of psychiatrists, social scientists, and lawyers, may provide data to improve judgment about the most efficient way to permit the presentation to the court of the total relevant picture of personality stress and social strain. Indeed, a comparable technique is proving its effectiveness in the University of Chicago study of small group interaction in a jury trial(27).

Experiments may be designed to explore the effectiveness of "memory" under these trial conditions and to test procedural changes in which the psychiatrist is able to communicate his best factual estimates without attempting to transmute them into terminology employed in legal doctrine.

Even these brief and inadequate reminders of the distinctive frames of research reference among psychiatrists and lawyers suffice to identify many areas of overlapping interest. On the one hand, a detailed knowledge of the formal and effective decision institutions of the community is essential if we are to uncover pertinent information about the degree in which legal arrangements increase or decrease mental disease or affect its form and content. On the other hand, psychiatric findings and methods of clinical study may be of far-reaching importance in explaining, or considering, the consequences of community decision on general issues or concrete cases.

A word on the impact of legal process upon mental health: The established practices of arrest, detention, arraignment, provision of counsel, handling of release on bail, investigation, assigning of judge, fixing of date of trial, demeanor of judge, mode of examination—to go no further—may, upon combined psychiatric and sociological inquiry, prove to be unnecessarily anxiety producing. These practices may be so disruptive of crucial family relationships, so damaging to self-esteem, and so shocking to standards of justice embodied in the superego, that they inflict the precipitating and necessary cause for severe and irreversible psychic damage. Within a wider community framework, if these practices are demonstrated to be relatively confusing and hence unenlightening to the reading public, demoralizing to the livelihood and competence, and disillusioning to faith in democracy, it may become clear that their deterrent effect is the reverse of that intended.

In a word, if we examine the total "value impact" of legal practices with the armory of psychiatric and behavioral instruments now available for the study of any detail-in-context, it is practicable to discover the

degree to which legal practices have positive or negative impacts upon the psychiatric health (well-being) and other values of individuals and institutions. This means that we sample how legislators, executives, administrators, the police, judges, and other officials (and official doctrines and operations) affect the emotional integrity and the total value position of others (and are themselves affected)(28).

At this point we turn more specifically to promising lines of collaborative research, hoping to amplify and modify the conceptions touched upon thus far. For convenience, we classify the proposed lines of study in 6 groups: (A) Studies of the participants in the legal process; (B) of the procedures by which legal administrative decisions are arrived at; (C) of the sanctioning and corrective methods employed by the community to accomplish its objectives; (D) of the factors that affect the degree of conformity or non-conformity to legislative policies (authoritative prescriptions) of the community; (E) of the process of struggle and agreement, especially in the world community; (F) of professional education and development.

Every individual and group that plays a role in the decision process of every community is a potential subject of investigation by the use of the hypotheses and methods of psychiatry and the social sciences, and oriented toward the principal questions pertinent to legal inquiry. We concentrate upon two groups briefly, the "recommenders" and the "invokers," in order to provide a somewhat specific picture of the possibilities(25, 29).

Not much is known about the psychological identity of persons who take the lead in demanding legislation whose primary or sanction provisions stand out, in terms of community norms, as either remarkably coercive or restrictive, or as notably "tolerant" or permissive. We are almost ignorant of the epidemiology of pressure groups and individuals who are strikingly coercive or permissive on sanctioning measures such as capital punishment, prolonged imprisonment, deportation, sterilization (and so on); and who are active in support of extreme and violent policies on such topics as school and social segregation, intermarriage among ethnically distinct individuals, divorce, obscenity in the contents of mass media of communication, religious worship in the public schools, loyalty oaths, regulation of trade unions and business monopolies, and alcohol consumption. These questions are all controversial at various times and places in our civilization; and psychiatrists have come to realize that they may provide congenial forms of ego-syntonic role-taking as defenses against expressions of the inner tension of the mentally ill, or may be social reflections of ego-dystonic conflicts and compulsions.

It is obvious that even if these psychic realities are better studied they do not necessarily determine the social validity of the conflicting opinions themselves. Even an extreme position, or willingness to play an active agitational part in public life, does not warrant an insinuation of disease. However, it cannot be denied that the accumulation of psychiatric knowledge has often connected the *different* with the pathological. Enough miscellaneous data, amply augmented by a steady stream of innuendo, is now in circulation to justify a serious attempt to put the whole problem in balanced perspective. It may even diminish somewhat the alleged tendency, for example, to assume that whatever is not "conservative" is "crazy."

Such an enterprise is peculiarly suitable to the joint efforts of lawyers and psychiatrists. This is especially true when we study not only the "recommenders," but the "invokers" of existing statutes, doctrines and other formally authoritative prescriptions. What motivations energize public officials who are extraordinarily zealous in "carrying out the law"? What are the motives and characteristics of unofficial members of the community who formally take the initiative in alleging, whether falsely or accurately, the criminal violation of which sorts of community rules? There has already been psychiatric concern, and clinical research, directed at the so-called litigious, frequency paranoid, personality. How many of these complaints, when investigated by competent teams, would prove to have a factual basis, whether or not the complainants press them? There is also the converse problem. What are the qualities

of those considerable numbers of passive, possibly masochistic, individuals who suffer undoubtedly illegal deprivations (*e.g.*, assaults) without invoking legal protection?

The way that judges or juries solve the problems with which they are presented depends in no small degree not only upon what comes to their conscious focus of attention during the litigation, but also the myriad preconscious stimuli which unknowingly impinge, and the unconscious (endogenous) factors to which they respond but do not attend. And not *all* that is brought into the *conscious* attention field is successfully guided by the "procedures" which bear this label in legal language. In general, there has been insufficient concern and hence knowledge about the psychological effect of the procedures which relate to the persons permitted to be present in the courtroom, or which formulate limits upon how the parties present their claims and justifications through counsel (including arguments and evidence); or which seek to determine how the final acts of deliberation and commitment are arrived at.

It is essential to realize that in terms of effect any given decision is oriented toward the *future* and toward the *community as a whole*. The immediate response of judge or jury has an immediate effect upon the total value position and especially the emotional well-being of the immediate parties. But the conspicuousness of this impact should not distract us from recognizing that all other participants are similarly affected. This is not only true of counsel for the defense and prosecution, but for the witnesses, the judge, the jury, the immediate spectators, and for the community outside the courtroom.

However, these *immediate* effects are only some of those that follow a decision outcome, and hence are presumably brought to the notice of decision makers when they allow themselves to be guided by the comprehensive value-objectives of a body politic. Relevant considerations include: 1. Longer range as well as immediate effects upon the offender; 2. Deterrent impacts upon potential deviants from prescribed norms; and 3. Impacts upon other members of the public. The problem that challenges joint research is how to bring psychiatric knowledge to its optimum place in the pre-decision sequence.

Clinical data derived from representative psychiatric cases, supplemented by psychiatric interview and psychological projective material, need to be studied step by step in order to develop more explicit criteria for the total involvement of psychiatrists in the case from its inception. It is abundantly evident from experience to date that lawyers and psychiatrists have been insufficiently informed of the considerations that enter into their distinctive approaches. Hence very few new procedural proposals have thus far emerged. It would of course be valuable to have other disciplines represented in these case studies, notably sociologists and psychologists(30, 31, 32).

Another feature of these case studies can be the making of estimates of the *future* result of the entire range of alternatives open to the community decision makers (police, prosecutors, court, *etc.*) at each step of the way. This can be especially productive when teams composed of several disciplines are included, both in the investigation of past cases and in the concurrent examination of pending cases.

Some of the estimates of future alternatives will relate almost entirely to the *defendant*. What is the probability that he will repeat the same act that he is believed to have committed in the past? For example, what is the likelihood that a molester of children will turn into a rapist within the next five years if released presently without therapy of a particular kind? Or, on the contrary with therapy what are the chances that he will abstain from any sexual offense? If the assumptions made about the future are less contingent upon estimates of *present psychopathology* than upon *exposure to specific environmental circumstances*, the critical question becomes that of judging the likelihood that the defendant, if released under various conditions, will be confronted by an upsetting environment. We use the term "upsetting" only to imply that the situation will favor the occurrence of an act that violates a norm of conduct. In our capacity as scientists, it is relevant to consider another possibility, which although formally excluded from the scope of the court, is appropriate to other pub-

lic order officials. It is likely that the defendant who is performing a mild sex offense today will turn into another type of offender, a murderer, for instance, tomorrow(33) ? Questions of this kind arouse the uneasiness of lawyers, since they appear to contain an element of prior judgment; they ought therefore to be considered in detail as part of the agenda of research.

We have been referring to the specific defender before the court and the range of psychiatric testimony that can be brought to the notice of the court by procedures. Another body of psychiatric and social science investigation can relate to *potential offenders other than the defendants.* What will be the effect upon potential offenders of adopting any specific alternative in dealing with individual defendants of various categories ? Deterrence is a recognized aim of public policy in these matters, and it is plausible to believe that court procedures can be adapted to the simple presentation of expert estimates of collective results.

For purposes of systematic analysis it is convenient to add a third category to be covered by estimates referring to the future. We include *all members of the public other than defendants or potential performers of a given offense.* Under various circumstances members of the public are likely to respond to court action in ways that affect public order and psychic health. Hence experts on public response may be asked to estimate the reception likely to be given a range of specified decision outcomes. For example, if the court deals with an offender in ways that are regarded as outrageously lenient by influential and active members of the public, how will this affect the treatment received by a released defendant, as well as the status of the officials and organs responsible for public order ? One outcome may be a strong demand that the legislature change the criminal code in directions that restrict the individuation of the court's treatment of offenders. Here again we are touching a topic that occasions uneasiness among lawyers. No one need deny that estimates of public response probably enter into the judgment of courts. But there is reluctance to face such matters directly for fear of undermining the degree to which courts operate independently of political factors, or are reputed so to operate. Clearly a borderline topic of this kind is peculiarly suitable for careful, long-term, joint research. Eventually it may be regarded as practical to experiment with rules of procedure that permit estimates of public response to be made by experts.

Psychiatry and the behavioral sciences have as yet contributed little to many questions of trial process, such as proof in the adversary setting, the meaning and efficacy of traditional devices like the oath, and of the validity of newer information-gathering methods such as the polygraph "lie detector," and "truth serum" drugs(34, 35, 36). Still broader inquiry is needed into the dynamic interaction of the trial participants, the accused, the judge, the contending attorneys, the public, and the mass media of communication.

A further major line of joint research relates to measures relied upon by community decision makers to cope with deviational conduct(37). It is more obvious than ever that ordinary sanctioning arrangements, when they are not purely punitive, are primarily educative. They presuppose that an individual knows enough of the appropriate culture to learn when he is confronted by a contingent threat of negative sanction, or when he is exposed to the sanction if he takes a deliberate risk and loses. The presupposition that an individual is educated or educatable, in this sense, does not apply to some categories of people. It is one of the continuing contributions of psychiatry that it is improving the criteria by which it can estimate the future conduct of individuals under specified conditions, helping thus to identify the defendant who is not at a given time amenable to the educative impact of sanctions and hence not deterrable by them. Besides the unassimilated, who have not acquired the culture in the first place, are certain categories of psychological illness and mental defect. These are not *sanction* but *corrective* problems; and the aim of corrective measures in so far as the defendant is concerned is to reconstruct the individual's mastery of himself and the culture to a level that makes it possible for him to learn from sanctioning measures. This is consonant with the psychiatric ther-

apeutic goals of re-establishing an effective function by balance of ego-superego control of psychic functions. Further research is needed to provide firmer bases for the prediction of the relative efficacy of various alternative deterring and sanctioning methods on the individual and his community. Not enough is known about the dynamics and effectiveness of retributive, deterrent, and rehabilitative techniques in response to behavior which offends the social group. Although absolutist and often contradictory assertions are reiterated in the literature of the two professions, we have little evidence concerning whether punitive sanctions deter potential malefactors. More specifically, we do not know which legal sanctions deter what kinds of individuals from committing what kinds of antisocial acts. There is, as yet, practically no body of valid information to draw upon in selecting candidates for probation and parole, or in abetting the success of those who have been selected(39). Perhaps most important is the tentative nature of our information regarding the relationship between the informal processes of social sanctioning and the formal legal procedures, especially of the reincorporation into the community of the released offender.

In modern America the psychiatrist is being called upon to play an increasingly important part in every phase of community deliberation and action. While it is common knowledge that the psychiatrist is drawn into many criminal and civil cases and is continually involved in the activities of agencies of correction and custody, it is necessary also to recognize that he is now likely to be asked to appear before administrative boards and commissions and, speaking for himself or for an association of professional colleagues, to testify before committees of the legislature at all levels of our governmental system. Properly organized research teams are in a position to explore for the first time the total impact of a given kind and magnitude of psychiatric difficulty upon conformity and non-conformity to community norms. It is possible that one result of research will be to suggest that some of the norms of conduct prescribed in community codes are unenforced and in fact may be unenforceable due to ambivalent community responses to them. Scientific teams may provide the factual inventory on the basis of which codes may be kept in harmony with the fundamental objectives of public order. We suspect that revisions are likely to be indicated in some of the statutes relating to sexual conduct, for instance(41). The attempt in writing criminal codes to stigmatize as "criminal" certain forms of behavior may fail because the particular sanction fails to correspond to the moral judgment of the community(42, 43). It is at least possible that psychiatric problems may be precipitated in these cases by the individual conflict which in turn is a reflection of paradoxical and inconsistent community expectations and sanction (40, 44).

In view of the urgency of world affairs, we feel a special sense of the importance of the field of international law and relations in so far as the problems connected with these difficult issues can be given factual study. Psychiatrists have traditionally fought shy of the study of factors contributing to war and crisis, to revolutionary conflict, rebellion and riot. Yet it is obvious that our professional concern for mental health goes much further than the case by case care of individuals. We do in fact explore the collective impact of various factors upon the incidence of mental difficulty. Before the last war, the physicians of The Netherlands issued a declaration concerning war as a medical problem of research and therapy. And it must be admitted that in so far as collective, no less than individual, living is responsive to unconscious factors, the psychiatrist (and psychoanalyst) is professionally involved. The crucial issue is whether we are equipped with research methods and conceptual categories capable of being fruitfully applied to the gigantic issues at stake. Our view is that we are in position to make a beginning and that exploratory research can be productively directed to certain problems. Can we aid in identifying the situation, for example, in which the rival leaderships in a community situation, or in an institution, move toward a breaking point? Published studies of such community situations would probably serve as objective reminders to leaderships everywhere of the explosion points in human

affairs, and might exercise a deterring influence upon risk-taking under hazardous conditions. At any rate, we can hope by means of joint researches to learn more about the propensities to coerce, lawfully or unlawfully, that are found in the relations among national states as well as social classes, interest groups, and individuals. We believe that whatever we can contribute, however modest, is worth the effort(45).

No plan less ambitious than a National Institute devoted to an integrated and comprehensive attack simultaneously carried out on all phases of strategic problems common to psychiatry and law is responsive to the scope of these social dilemmae(7). In later publications it is our intention to consider some of the basic desiderata for such an institution, including its structure and function, the training and disciplinary background of its chief participants.

BIBLIOGRAPHY

1. Freedman, L. Z. : Yale Law Alumni Newsletter, **8** : 4, May 1951.

2, 3. See the Symposium on The Law and Behavioral Science Project of the University of Pennsylvania, Journal of Legal Education, **2** : 73, 1958.

4. Temple Law Quarterly, **29** : 233, Spring, 1956.

5. Sachs, Howard : J. Legal Ed., **11** : 316, 1959.

6. Freedman, L. Z., and Lasswell, H. D. : Cooperation for Research in Psychiatry and Law. Am. J. Psych. To be published.

7. Michael, Jerome, and Adler, Mortimer J. : An Institute of Criminal Law and Criminal Justice, Bureau of Social Hygiene, 1932, N. Y.

8. Dession, G. H. : Deviation and Community Sanctions. *In* Psychiatry and Law (eds. Hoch and Zubin), pp. 1-12, New York : Grune and Stratton, 1955.

9. Lasswell, H. D. : Legislative Policy, Conformity, and Psychiatry, *ibid.*, pp. 13-40.

10. Freedman, L. Z. : Conformity and Non-Conformity, *ibid.*, pp. 41-53.

11. Freedman, L. Z., and Hollingshead, A. B. : A. J. Psychiat., **113** : 9, Mar. 1957.

12. Hollingshead, A. B., and Freedman, L. Z. : Social Class and the Treatment of Neurosis. *In* The Social Welfare Forum, 1955, pp. 194-205.

13. Lasswell, H. D. : Psychopathology, and Politics. U. of Chicago Press, Chicago, 1930 ; and Power and Personality, W. W. Norton & Co., 1948 [T. W. Salman Memorial Lectures, New York Academy of Medicine].

14. Jahoda, Marie : Internat. Soc. Sci. J. [UNESCO], **11** : pp. 14, 1959.

15. Freedman, L. Z. : Internat. J. Med., **172** : 10, Oct. 1959.

16. Freedman, L. Z. : Sci. Am. **202** : 3, Mar. 1960.

17. Dession, G. H., Freedman, L. Z., Donnelly, R. C., and Redlich, F. C. : Yale Law Review, **62** : 315, Feb. 1953.

18. Leighton, A. H. : A Proposal for Research in the Epidemiology of Psychiatric Disorders. *In* Epidemiology of Mental Disorder, Milbank Memorial Fund, 1950.

19. Rennie, T. A. C. : The Yorkville Community Mental Health Study. *In* Interrelationships Between the Social Environment and Psychiatric Disorders, Milbank Memorial Fund.

20. Freedman, L. Z. : Naval Med. Bull., **48** : 722.

21. Glueck, S., and E. : Unravelling Juvenile Delinquency. Cambridge : Harvard University, 1950.

22. Glueck, S., and E. : Physique and Delinquency. New York : Harpers, 1955.

23. Stanton, A. H., and Schwartz, M. S. : The Mental Hospital. New York : Basic Books, 1954.

24. Caudill, W., Redlich, F. C., Gilmore, H. R., and Brody, E. B. : Am. J. Orthopsychiat., **22** : 314, 1952.

25. See Gross, B. M., The Legislative Struggle : A Study in Social Combat. New York : McGraw Hill, 1953.

26. Vose, C. E. : West. Res. Law Review, **6** : 101, Winter, 1955.

27. Strodtbeck, F., James, Rita M., Hawkins, Charles : Am. Sociological Rev., **22** : 713, Dec. 1957.

28. Lasswell, H. D., and Kaplan, A. : Power and Society, New Haven : Yale University Press, and McDougal, M. S. : Yale Law J., **61** : 915, 1952.

29. Lasswell, H. D. : The Decision Process: Seven Categories of Functional Analysis, Bureau of Governmental Research, University of Maryland, College Park, Maryland, 1956 (23 pp.).

30. Berman, L. H. and Freedman, L. Z. : Am. J. Psychiat. In press.

31. Freedman, L. Z., and Kaswan, J. W. : Polistaraxic Behavior and Projective Studies. Read at Annual Meeting of American Orthopsychiatric Society, 1958, New York.

32. Freedman, L. Z. : Sexual, Aggressive and Acquisitive Behavior : A Study in Polistaraxic Psychiatry. Summary of Scientic Papers. Annual Meeting of American Psychiatric Association, 1959.

33. Dession, G. H. : Psychiatry, 18 : 1, Feb. 1955.

34. Dession, G. H., *et al.* : as cited note 17 above.

35. Arens, R., and Meadow, A. : Columbia Law Review, 56 : 19, Jan. 1956.

36. Dession, G. H. : Buffalo Law Rev., 5 : 22, Fall, 1955.

37. Lasswell, H. D., and Donnelly, R. C. : Yale Law J., 68 : 869, Apr. 1959.

39. Hughes, G., Freedman, L. Z., and Michaels, L. : Differential Prediction of Parole Successes in Sexual, Aggressive, and Acquisitive Offenders. In manuscript.

40. Leavy, S. A., and Freedman, L. Z. : Social Problems, 4 : 1, July 1956.

41. See G.A.P. Report No. 9 : Psychiatrically Deviated Sex Offenders, May 1949, revised Feb. 1950.

42. Cohen, J., Robson, R. A. H., and Bates, A. : Parental Authority : The Community and the Law, New Brunswick, N. J. : Rutgers University Press, 1958.

43. Blum, W. J., and Kalven, H., Jr. : Univ. of Chicago Law Rev., 24 : 1, Autumn, 1956.

44. Dession, G. H., and Lasswell, H. D. : Yale Law J., 65 : 174, Dec. 1955.

45. See Lasswell, H. D. : The Scientific Study of International Relations, Yearbook of World Affairs, pp. 1-28, 1958 (London Institute of World Affairs).

THE PSYCHOPHYSIOLOGIC SEQUELAE OF HEAD INJURIES [1, 2]

ARTHUR H. AUERBACH, M.D.,[3] ALBERT E. SCHEFLEN, M.D.,
RAYMOND B. REINHART, M.D., AND CAROL K. SCHOLZ, PSW

This paper is the report of an inquiry into the nature of the post-traumatic syndrome. This condition, also known as the post-concussion syndrome, occurs frequently after head injuries. It is a diagnosis made mainly by neurologists and neurosurgeons rather than by psychiatrists. The most usual symptoms are headache, dizziness, anxiety, irritability, insomnia, impairment of memory and concentration, and reduced tolerance to exertion, alcohol and heat.

The cause of the condition is not entirely clear, although it is generally believed that both physical and emotional factors contribute to it(12). Among the organic causes named are: vasomotor changes, perhaps associated with the brain stem damage(11), meningeal adhesions which produce traction on the dural sinuses(14) and effusion of cerebro-spinal fluid into the sub-dural space(10).

Emotions enter into the post-traumatic syndrome in a number of ways: 1. The head has great psychic value, and injury to it may represent an overwhelming of the ego. The headache, dizziness and other symptoms originally caused by organic damage may serve as a nucleus for a neurotic reaction(20).

2. The hope for compensation often operates unconsciously to prolong symptoms.

3. Where litigation is involved there may also be the desire for revenge, or the need for tangible proof in the form of judicial decision that one's symptoms are justified.

4. The uncertainty surrounding the post-traumatic syndrome permits the development of doubts and fears of the unknown. When the symptoms persist, the patient often senses that what he has is not a well-defined, clearly understood condition but rather a vague one which can be variously interpreted. His contact with doctors, lawyers and others may leave him wondering whether his trouble is due to brain damage, "nervousness," or imagination. Although most patients eventually recover, it can be at a considerable cost in time, money and suffering; and a certain number remain permanently incapacitated by the post-traumatic syndrome.

METHOD

The general method employed was follow-up interview and examination of patients who had suffered head injuries. Only those injuries were included which were severe enough to result in admission to a hospital for 24 hours or longer. Forty-eight cases were found among 130 patients who had been admitted to the neurosurgical service of Temple University Medical Center because of a head injury from January 1, 1957 to October 1, 1959. Together with 2 other patients, the total number of subjects is 50, with age range from 15 to 57 years, and a mean of 31. It is not easy to say whether the patients we saw are a fair sample of all head injured subjects. Our sample may contain a larger proportion of patients with residual symptoms, since these would probably be more likely to agree to a re-examination. The interval between the injury and examination ranged from 5 to 36 months, with a mean of 12 months. In only 10 cases was the interval greater than 18 months.

The interviews were conducted by psychiatrists along the lines of the usual medical and psychiatric history. Data were recorded on a form consisting of 80 items covering both physical and emotional aspects of the injury and recovery, as well as details of the pre-traumatic life situation and personality. Examples of the variables which were inquired into are: the subject's socio-economic status; type and severity of injury; nature of the post-traumatic symp-

[1] Read at the 116th annual meeting of the American Psychiatric Association, Atlantic City, N. J., May 9-13, 1960.

[2] This investigation was supported, in part, by a research grant from the Office of Vocational Rehabilitation, Department of Health, Education and Welfare, Washington, D. C. The authors wish to express their thanks to Norma Scheflen, Ph.D., Max Katz, M.D. and Allen Miller, M.D., for their assistance.

[3] 255 S. 17 St., Philadelphia 3, Pa.

toms; and level of adjustment following injury.

The original aim was to divide the subjects into two groups, according to whether or not they had developed the post-traumatic syndrome. The two groups would then be compared, in an effort to determine which variables correlate with the occurrence of the syndrome. However, in many cases it was difficult to decide whether or not the subject had the post-traumatic syndrome. Most patients had developed some, but not all, of the characteristic symptoms. There was quite a scattering of symptoms among the subjects, with no obvious clustering which would allow a division of the sample into groups. The number of subjects showing each of the symptoms 6 months after injury is presented in Table I.

This scattering of symptoms raises the question of the definition of the post-traumatic syndrome. We considered the definition of Raines *et al.*(3, 16), based on their study of Marines who had suffered head injuries during the Korean conflict. Their definition appears quite reasonable: the post-traumatic syndrome consists of headache as a prominent symptom associated with at least one each of the "intellectual" symptoms (impairment of memory or concentration) and emotional symptoms (anxiety or irritability). However, among our subjects this definition excluded quite a few who had significant symptoms but did not meet the above criteria.

The issue is complicated by the fact that each symptom can be caused by organic brain damage or by emotional factors. Furthermore, there is considerable overlap with the symptoms of the traumatic neurosis, as commonly understood (or, post-traumatic hysteria, in the usage of Brosin(2) and others.) Some of our subjects, if examined by a psychiatrist, would be diagnosed traumatic neurosis or post-traumatic hysteria, while a neurosurgeon might classify the same patients as post-traumatic syndrome.

Therefore, it was decided to ignore temporarily all possible classifications, and instead study all the symptoms of all the patients. The reasoning was that most patients had had one or more of the symptoms listed above at some stage of their convalescence. They had suffered to a greater or lesser degree, and the symptoms had persisted for varying periods. There was a continuum extending from the least degree of symptoms and incapacity to the highest. Each patient was rated on a scale from 1 to 5 by the psychiatrist who interviewed him. The factors which went into the rating were the degree and duration of symptomatology and incapacity from the symptoms listed in Table I. Regardless of how many of these symptoms the patient had, or what caused them, he received one rating which roughly expressed the degree of suffering and incapacity he had experienced from post-traumatic symptoms. Note that symptoms due to gross neurologic changes are not included here. A rating of 1 is given for the lowest degree and 5 for

TABLE 1

INCIDENCE OF SYMPTOMS 6 MONTHS AFTER HEAD INJURY N=50

Symptoms	*Number of Subjects*	*Percentage of Subjects*
Anxiety	26	52%
Headache	26	52%
Irritability	20	40%
Dizziness	18	36%
Fatigability	18	36%
Impaired concentration	14	28%
Impaired memory	11	22%
Insomnia	10	20%
Reduced alcohol tolerance	6	12%
Other Symptoms	7	14%
No symptoms 3 months after injury	11	22%
No symptoms 6 months after injury	13	26%

the highest degree of symptoms and incapacity. Reference will be made below to "severity of post-traumatic symptoms." By that we mean the rating on this scale.

A few examples will help explain this system of classification :

Class 1.—A 25-year-old woman, while walking slipped and hit her head, and was unconscious for a few minutes. She was hospitalized for 4 days, and discharged with the diagnosis of concussion. She was able to return to work within a few days. She experienced some tiredness for about a month, which resulted in her getting a little more sleep than usual. Afterwards she felt fine, with no residual symptoms.

Class 3.—A 30-year-old man who suffered a concussion in an auto accident, was hospitalized for 4 days and returned to work after 3 weeks. Nine months later he still complained of headaches and dizziness which seemed to be worse in strong sunlight. He was able to work but was worried about these symptoms, felt there must be definite brain damage, and feared that he would get worse. His concern over his health was restricting his social life, and he was rather preoccupied with a lawsuit in which he hoped to secure compensation for his injuries.

Class 5.—A 21-year-old man who had a severe head injury in an auto accident, was unconscious for 4 days, and afterwards had aphasia and right hemi-paresis, both of which gradually improved. Six months later he still had difficulty speaking and felt weak. He had all the post-traumatic symptoms except insomnia, and was unable to work. Whereas he previously had been somewhat irresponsible and carefree, he now was serious and cautious.

The distribution of subjects on this symptomatology-incapacity scale is shown in Table 2.

TABLE 2

DISTRIBUTION OF SUBJECTS ON THE SYMPTOMATOLOGY-INCAPACITY SCALE

Symptomatology-Incapacity Rating	*Number of Subjects*
1	12
2	9
3	17
4	9
5	3
Total	50

It will be noted from this table that a sizable number of patients recover promptly (class 1), but that a somewhat larger number suffer moderately severe symptoms for an appreciable length of time (class 3) and that a smaller number have severe symptoms and incapacity (class 5). Classes 2 and 4 occupy intermediate positions.

The rest of the project consisted of a search for those factors which are responsible for severity of post-traumatic symptoms.

The patients were rated in many categories of presumed or possible significance for the post-traumatic syndrome. The ratings were recorded in a manner suitable for IBM tabulation. Many of the variables could be roughly quantified; an example is the symptomatology-incapacity index mentioned above. All the data were then tabulated by use of the IBM 650 digital computer machine. The next step was the search for significant relationships between the severity of post-traumatic symptoms and, on the other hand, each of the other variables. The chi square test of relationship was used. All the chi square values were calculated by means of the digital computer machine.

RESULTS

Some of the more important variables will be mentioned individually. For some of these, the distribution of patients with respect to that variable will be shown; and the presence or absence of relationship with severity of post-traumatic symptoms will be indicated.

1. *Severity of injury.* In evaluating the severity of injury we adopted the standard used by Raines, *et al.* (3, 16) for closed head injuries. There are 3 categories : 1. A blow to the head without apparent neurological significance; 2. Concussion, with no subsequent evidence of brain damage; 3. Prolonged unconsciousness or other evidence of brain damage. The distribution of cases according to severity of injury is shown in Table 3.

No significant relationship was found between severity of injury and severity of post-traumatic symptoms ($X^2=1.6804$; $p>.2$).

TABLE 3

DISTRIBUTION OF SUBJECTS ACCORDING TO SEVERITY OF INJURY

Injury Category	*Number of Subjects*
1 (least severe)	11
2	20
3 (most severe)	19
Total	50

2. *Degree of pre-traumatic personality disturbance.* Each patient was rated on a 4 point scale as to degree of personality disturbance prior to injury. For the purpose of this study we did not consider the *type* of personality disturbance, but only estimated the degree of departure from normal. The distribution of subjects according to pre-traumatic personality disturbance is shown in Table 4.

TABLE 4

DISTRIBUTION OF SUBJECTS ACCORDING TO PRE-TRAUMATIC PERSONALITY DISTURBANCE

Rating of Personality Disturbance	*Number of Subjects*
1 (least disturbed)	13
2	22
3	10
4 (most disturbed)	5
Total	50

Pre-traumatic personality disturbance was significantly related to severity of post-traumatic symptoms (X^2=26.178 ; $p<.01$).

3. *An injury which is psychologically traumatic.*

Example : A 35-year-old man who was driving an automobile was involved in a collision with another car. His brother, with whom he was very close, was killed. The subject is an unaggressive man with a strong conscience. For about 6 months he was preoccupied with thoughts of his brother, and he seemed to blame himself for the accident. He developed marked post-traumatic symptoms with no evidence of brain injury.

Each subject was rated in this category on a 4 point scale, analogous to the ratings previously described. The distribution is shown in Table 5.

TABLE 5

DISTRIBUTION OF SUBJECTS ACCORDING TO DEGREE OF PSYCHOLOGICAL TRAUMA

Ratings of Psychological Trauma	*Number of Subjects*
1	11
2	22
3	12
4	5
Total	50

Psychological trauma was significantly related to severity of post-traumatic symptoms (X^2=29.4853 ; $p<.01$).

4. *Persistent neurologic defects.* This refers to those defects existing at least 6 months after injury. These were found in 13 patients (Table 6).

TABLE 6

PERSISTENT NEUROLOGIC DEFECTS

Symptoms	*Number of Patients*
Partial aphasia	3
Post-traumatic seizures	2
Ataxia	1
Other incoordination	4
Loss of smell and taste	3
Impaired hearing	1
Tinnitus	1
Impaired motor power	2
Hyperesthesia of scalp	1

Severity of neurologic sequelae was rated on a 4 point scale. *A significant relationship with severity of post-traumatic symptoms was found (X^2=17.6011 ; $p<.01$).*

5. *Compensation.* Some form of compensation was involved in 24 cases. There was a significant relationship between the factor of compensation and severity of post-traumatic symptoms (X^2=9.3599 ; $p<.01$).

6. *Special stress in early life.* This includes such factors as open conflict in the family ; separation from a parent ; and economic or socio-cultural stress of the family in the community. Among those patients (46) who could be rated on this point, 24 had undergone such stress in childhood, and they were found to have worse post-traumatic symptoms (X^2=66.605 ; $p<.01$). Perhaps this factor is related to pre-traumatic personality disturbance.

7. *Psycho-social stress during convales-*

TABLE 7

SEVERITY OF POST-TRAUMATIC SYMPTOMS AS RELATED TO OTHER FACTORS

Significant Relationship	*Probable Relationship*	*No Relationship*
Pre-traumatic personality disturbance	Psycho-social stress during convalescence	Severity of injury
Persistent neurologic defects	Duration of post-traumatic amnesia	Sex
Psychologically disturbing injury		Age
Compensation involved		Race
Special stress in early life		Occupation
		Education
		Type of injury (assault, auto accident, *etc.*)
		History of athletic activity
		Previous head injury

cence. Examples of this are : an unsympathetic environment ; the development of a new, painful situation not associated with the injury ; or the continuation of environmental stress which existed at the time of injury. There were 22 such patients. They are rated as to severity of stress on a 3 point scale. *There appears to be some relationship between this factor and the severity of post-traumatic symptoms* ($X^2=9.6311$; $p<.05$).

8. *Duration of post-traumatic amnesia* was found to be possibly related to severity of post-traumatic symptoms ($X^2=7.904$; $p<.10$).

Other variables were tested, and no relationship was found between them and severity of post-traumatic symptoms. These are shown in Table 7 which is a summary of the findings.

DISCUSSION

In a personal sense, the most surprising finding was that severity of injury was not related to severity of post-traumatic symptoms. One's clinical impression is that there is such a relationship. Careful re-examination of the data indicated the following possible explanations : 1. This clinical impression is actually based on those patients with residual neurologic defects. These subjects had severe injuries and had more post-traumatic symptoms, but there were many others with equally severe injuries *according to our standards* who made good recoveries. 2. The second point follows from this, and concerns the manner of rating severity of injury. This was done on the basis of length of unconsciousness and other signs of brain damage at the time of injury. But it is known that some of this damage is reversible ; the good recovery of some severely injured patients must be based on this fact. On the other hand, irreversible damage, as detected by persistent neurologic signs, is associated with increased post-traumatic symptoms. 3. A third reason for the lack of relationship is that many patients had relatively severe reactions to minor injuries.

Turning to the psycho-social factors, one of the most definite relationships is between pre-traumatic personality disturbance and post-traumatic symptoms. In considering this result, it should be remembered that our estimate of the pre-traumatic personality is of necessity approximate. Rating was based on our clinical impression during the interviews and a review of the patient's social, occupational and family adjustment prior to the injury. Essentially the same method has been used in other studies(5, 8, 16).

In spite of this caution, we believe there is a causal relationship between pre-traumatic personality disturbance and post-traumatic symptoms. It seems that where a personality disturbance exists, a head injury is usually enough to upset the emotional balance and result in prolonged symptoms. We found this to be equally true for neurotics and patients with character disorders.

Some of the patients showed neurotic reactions in addition to, or in place of, post-traumatic symptoms. The most common ones were the tendency to use the injury as a face saving device for all other difficulties; the fear that a vital part of the body was irreparably injured; the feeling of vulnerability, or that one has been abandoned by fate; guilt reactions if the subject contributed to the accident; and fear of insanity.

Interestingly, some patients with personality disturbances recovered promptly, and showed no tendency to use the injury or their symptoms in the service of neurotic needs. Evidently, for these subjects the injury was not particularly stressful psychologically; perhaps it did not touch upon their important conflicts. Also, it seems that these patients had no previous tendencies to somatize their anxiety.

Injuries which were psychologically traumatic seemed closely related to severity of post-traumatic symptoms. However, we regard this result as merely suggestive because of the difficulty in retrospectively rating how disturbing an injury was. Both patient and examiner are apt to be influenced by the severity of present post-traumatic symptoms, which of course vitiates any subsequent correlation between the two factors. Our clinical impression is that the emotional impact of the injury is indeed important.

In those cases where compensation was involved, the patients had relatively worse post-traumatic symptoms. Whether the matter of compensation was settled or not did not appear significant. We have no explanation for this latter fact.

IMPLICATIONS

These results are generally in line with those of other authors(5, 8, 16, 21, 23) in indicating that emotional factors and circumstances of injury seem to be relatively more important than severity of injury (as ordinarily measured) in causing post-traumatic symptoms. Yet, organic, structural changes are also important, as indicated by the significance of neurologic sequelae.

At this point it should be stated that in spite of our emphasis on organic versus psychogenic, we share the present day holistic view of man. By "organic" we refer to those biological processes which at present are studied by a certain type of operations (neurologic exam, EEG, *etc.*); and by "psychogenic" we mean processes which are studied by other operations (psychiatric interview, *etc.*). We believe that in the present state of our knowledge the distinction is valid and necessary.

One reason for the distinction is that it determines the physician's therapeutic approach. Lynn, *et al.*(9) have pointed out that where the organic factors predominate, the doctor aims for retraining the patient and development of his undamaged capacities. He is oriented towards the probable acceptance of a certain amount of limitation of function. On the other hand, in psychogenic problems the indicated treatment is some form of psychotherapy, with the assumption that full recovery is possible. The proper balance of these two approaches depends on the accurate appraisal of the relative importance of each factor.

The problem of determining the extent of residual brain damage in individual cases can be extremely difficult. Various authors (2, 21) have drawn up lists of criteria to distinguish organic from personality determinants, but they conclude that frequently the distinction is still hard to make. Often some of the criteria point towards an organic origin and others toward an emotional one. The electroencephalogram may be of help, but can not be relied on confidently because of false positives as well as false negatives(2).

Obviously, the situation will be improved only by the development of better neurologic and psychiatric diagnosis. In each case, advances may take the form of entirely new diagnostic modalities or better application of existing ones. For example, on the neurologic side, the use of the electroencephalogram may be refined so that its value is increased.

Regarding the psychiatric aspects, at Temple University Medical Center a program of psychiatric follow-up of head injured patients has been instituted, in close conjunction with the neurosurgical follow-up. The hope is that continued contact with these patients will reveal more exactly how neurotic forces operate to prolong symptoms

and disability; and how these forces interact with symptoms of organic origin.

The second purpose of our follow-up is therapeutic: we attempt to deal with the neurotic and regressive reactions which occur. In most cases supportive therapy suffices. Where the injury has released a deeper neurosis, it is handled in the usual psychotherapeutic ways. Attention is also directed to the patients' reality situations: they are helped to obtain needed services from outside agencies such as the State Bureau of Vocational Rehabilitation and sheltered workshops. The results of this program will be reported in the future.

Summary

In this study the post-traumatic syndrome was investigated. It was found difficult to define the limits of this condition, and particularly to distinguish it from post-traumatic hysteria. Therefore, both diagnoses were temporarily ignored, and the injury was broadened to the general sequelae of head injuries, other than definite defects caused by known neurologic lesions.

These sequelae are psychosomatic in the truest sense of the term. They represent an intricate combination of organic and emotional processes. It seems that the symptoms following head injuries signify the sum of two quantities: 1. The damage to the brain and its surrounding structures; and 2. The patient's emotional reaction to this damage and to the experience of the trauma.

The important problem is to assess the proportion of each quantity in individual cases. In the hope of contributing to its solution, psychiatric follow-up of head injured patients has been instituted.

BIBLIOGRAPHY

1. Brenner, C., Friedman, A. P., Merritt, H. H., and Denney-Brown, D. E.: J. Neurosurg., **1**: 379, 1944.

2. Brosin, H. W.: *In*: Amer. Handbook of Psychiatry. Ed.: S. Arieti. New York: Basic Books, 1959.

3. Personal Communication from Dr. Caveness.

4. Dencker, S. J.: A.M.A. Arch. Gen. Psychiat., **2**: 569, 1960.

5. Denney-Brown, D.: Annals Internal. Med., **19**: 427, 1943.

6. Eisenberg, L.: Psychiat. Quart., **31**: 72, 1957.

7. Friedman, A. P., Brenner, C., and Denny-Brown, D.: J. Neurosurg., **2**: 36, 1945.

8. Kozol, H. L.: Arch. Neurol. and Psychiat., I, **53**: 358, 1945; II. **56**: 245, 1946.

9. Lynn, J. G., Levine, K. N., and Hewson, L. R.: Assoc. for Research in Nervous and Mental Disease, Vol. 24, 1945.

10. McConnel, A. A.: J. Ment. Science, **102**: 330, 1956.

11. McKenzie, H. G.: Trans. Am. Neurol. Assoc., **103**: 1943.

12. Merritt, H. H.: A Textbook of Neurology. Phila.: Lea and Febiger, 1955.

13. Muller, R., and Naumann, B.: A.M.A. Arch. Neurol. and Psychiat., **76**: 597, 1956.

14. Penfield, W., and Norcross, N. C.: A.M.A. Arch. Neurol. and Psychiat., **36**: 75, 1936.

15. Peterson, B. H.: Med. J. of Australia, **43**: 689, 1956.

16. Raines, G. N., Peterson, A. S., Liss, H. R., and Caveness, W. F.: Trans. Am. Neurol. Ass'n., 1957.

17. Richardson, J. C.: Canad. Med. Ass'n. J., **64**: 414, 1951.

18. Ruesch, J., and Bowman, K.: Am. J. Psychiat., **102**: 145, 1945.

19. Russell, W. R.: Brit. Med. J., **2**: 164, 1949.

20. Schilder, P.: *In*: Injuries of Brain and Spinal Cord and Their Coverings. Ed.: S. Brock. Baltimore: Williams & Wilkins, 1949.

21. Stengel, E.: *In*: Review of Psychiat. Progress. Ed.: G. Fleming, 1950.

22. Tuchler, M. J.: Postgraduate Medicine, **21**: A36, 1957.

23. Walker, A. E., and Jablon, S. A.: J. Neurosurg., **16**: 600, 1959.

PRINCIPLES OF ADMINISTRATIVE THERAPY

D. H. CLARK, F.R.C.P.E., D.P.M.[1]

In a previous article(2) the author described Administrative Therapy—the art of treating patients in a psychiatric institution by administrative action. Some of the pains and problems of the administrative therapist were described and some of the methods to be followed in organization of the patients' life, in staff and medical organization and in leadership of the therapeutic community. This paper attempts to explore further aspects of administrative therapy.

An increasing number of experiments, all claimed as "therapeutic communities" are being set up in Britain and the U.S.A. Though these projects cater to differing groups of patients and consequently have different organization, they have in common a belief that modifying the social structure will bring about desirable changes in the patients. This is no new idea ; as T. P. Rees has pointed out, this was the belief that inspired most of the great founders of institutional psychiatry and was expressed in their term "moral treatment." In their time, however, they argued from self evident principles arising from religious belief or the doctrines of the Age of Reason, though as pragmatic physicians they justified their theories by their successes. Now we base our theorizing on the work of social scientists, in particular the descriptive studies of social anthropologists studying mental hospitals and comparing them with other societies, the experiments of social psychologists with experimental groups and the experiences of psychiatrists in group psychotherapy. We like to believe that we base our practice on a more secure theoretical foundation than our forefathers ; let us hope so, lest our endeavours decline into dreary custodialism as did theirs.

Most of the studies describe the changes made in the organization : the increased consultation, the opening up of communication, the democratic practices. They usually give hints of the anxieties aroused and the storms endured, and a few discuss the method used to introduce the changes. Hardly any of the studies have discussed the actions of the leader of the therapeutic community. There is even a sort of pretense that he hardly exists—that it could all have happened without his presence. Much of the exploration and innovation in the experiments is, of course, done by the junior staff and the patients themselves and it is from them that the enthusiasm and therapeutic drive comes ; the leader is but a catalyst. Yet it is as fatuous to ignore his contribution as it is to overestimate it. The papers describing therapeutic community experiments are nearly all written by the initiators themselves, an impressive group of men and women whose personal contributions must have often been decisive.

It is important to examine the methods of administrative therapy for others are seeking to repeat the work. Young psychiatrists are trying to set up therapeutic communities and are puzzled when things go wrong. It is worth remembering that the first recorded attempt at a Therapeutic Community was a failure. Bion and Rickman aroused such hostility by their attempts to restructure Northfields Hospital that they were extruded, as Taylor(7) describes.

The introduction and maintenance of a therapeutic community is not a simple task which can easily be accomplished by naïve enthusiasm. The old custodial regime has persisted because it offered comfort and relief for anxiety for many of the staff, especially those in senior positions, and attempts to rock it may be defeated by hostility and inertia.

Administrative Therapy is the art of organizing and directing a human organization in which psychologically disturbed people may acquire great personal stability and better social adjustment. It may be practiced in a single ward, in a section of a hospital or in a whole hospital. It is a form of large-group therapy in which most of the work is done with the staff so that the patients may benefit from the atmosphere and environment produced. It draws most of its ideas, concepts and methods

[1] Medical Superintendent, Fulbourn Hospital, Cambridge, England, Associate Lecturer in Psychiatry, University of Cambridge.

from individual psychotherapy and the psychiatrist's understanding of human dynamics but owing to the size of the groups concerned there are other areas of knowledge which are relevant, in particular, social psychology, social anthropology and the methods of business administration.

An administrative therapist comes to a custodial mental hospital and wishes to lead it to a more therapeutic way of functioning; he knows that the job can be done better and the patients helped more effectively, but the staff of the hospital, the patients and the neighbouring community do not know it. How is he to help them make this change? Much depends on how the staff feel about their work; if they are secure, confident, settled and certain that they are doing things well and that there is no ground for criticism, his task will be difficult indeed. Nowadays, however, a mental hospital running on custodial lines is not usually settled and confident. Morale in such institutions tends to be low, and there is a great deal of doubt, self questioning and anxiety among the staff, a whisper of new things afoot elsewhere, a query whether they could perhaps not learn something, coupled with sturdy denials that there is anything to be said for any of these new fangled notions.

First, the administrative therapist must assess the situation fully; assess the hospital, its morale, its functioning, the key persons and their knowledge, skills and attitudes, and most important the potentialities of the situation: the desire for change, the possibilities of change, the chances of money for new buildings, new developments and extra staff. After he has made this assessment he can begin to plan the approach; the change should be gradual and the innovator should go slowly. As occasion offers, the therapist must enunciate the principles that he regards of value in the hospital. These were clearly set out in the W.H.O. Report on the Community Mental Hospital(8): the need to trust the patients, to give them freedom, responsibility and a fruitful and active life. Though in that report they are mentioned as principles to be applied to the patients, they also apply to the staff. They too must be shown trust; they must be given scope for initiative; they must be allowed as much responsibility as their training, knowledge or personality structure will permit and they must have a full, active life. Many of the vicious degenerate practices of the old mental hospitals arose in the sheer boredom of staff penned for long years in a custodial hierarchy waiting to step into dead men's shoes.

Who are the people to help in the process of change? The social anthropologists have something to teach us here; they tell us that the first person to greet the newcomer to any community is a deviant. The administrative therapist should not immediately work with the first person who comes to him with ready protest. Further he should not bring in from outside too many new people who "know his ways." If he does there is a sad danger that they will be treated as other bright doctors, administrative nurses, occupational therapists and others have been in the past; they will be quietly ignored, cold shouldered and finally so discouraged that they leave, saying that the organization has beaten them. The Cummings(3) have pointed out that however bad a hospital may be, it is an ongoing organization and its stability depends on the norm bearers, the culture carriers. Belknap(1) pointed out in his study that the senior attendants were in fact the people who kept the hospital going and who maintained its traditions, and that attempts to impose reform on them by force had always failed. If, however, the norm bearers change their way, the new traditions are truly embedded in the fabric of the hospital. The Cummings suggested, that a suitable procedure is to find the accepted and respected leaders of the culture-carrying group and bring them to see the value of change. The Cummings went about this by inviting the staff to elect the new assistant chief male nurses and then worked with them. It is often possible to arrange for the culture carriers—the charge nurses, ward sisters or senior attendants most respected by their peers,—to go away on refresher courses or to spend a few weeks working in a hospital of more advanced methods. When they come back they can be given a free hand to show some of the things they have learned. (Nothing is of course more damag-

ing than to send a person on a course and then put him back into the same old stultified set-up.)

The new administrative therapist should examine most closely the communication system of the organization. This will nearly always be found to be stultified and hierarchical with a great blockage of information. Instructions are distorted as they filter downward, and only highly selected (and often misleading) information is allowed to reach the top. This can be changed. The most effective way is to start new meetings; this will gradually lead to group government and decision making. The administrative therapist finds group government congenial; it is a most effective way of allowing the development of new ideas. In the administration of the hospital there should be groups of senior medical and nursing personnel and groups of senior hospital officers. In the ward, group meetings, both of all the patients and of the staff are essential. In these meetings people who have never previously had a chance to make a contribution are delighted with the opportunity to come forward and speak of the things that they know; the value of this information flowing upward is immense. At the same time they see policy being formed and partake in working out its details, so that they too are committed to the new processes and changes that develop. These groups too are occasions to enunciate the principles of therapeutic organization and to work it out in practical detail.

Sensitivity in administrative action is essential too. Every administrative action can profitably be considered as carefully, and weighed as thoroughly, as the interpretation in psychoanalysis. It is not only what you say, but when, and how you say it that matters. An unpalatable decision, if delivered in the atmosphere of a friendly interview, may be accepted when it would be grossly humiliating and disruptive if communicated in a curt written message or in an open meeting. Of any administration action it is pertinent to ask: How was it done? Did it have the desired effect? What other effects did it have? and finally, What good did it do to the patients and the staff?

Crises occur in every organization and are not in themselves to be deplored. If everything runs smoothly, and no crises occur, it is likely that the community is ceasing to be therapeutic. It is the manner in which the crises are worked out, the open discussion, the acceptance of the solution put forward by the group rather than the resolution by panic-stricken authoritarian ukase that is therapeutic and bears within it the hope of further growth.

The administrative therapist must pay attention to the sanction and reward system of the organization. This is very important. In the classic custodial institution, promotion was by seniority and only reprimands could debar an attendant; the way to get on was to behave with extreme caution, never show any initiative lest you be reprimanded, and wait so that in due course the post of charge attendant fell to you. Punishment too often concentrated on entirely negative aspects of the functioning of the hospital: dire punishment for coming in late, for losing keys, for being involved in the disappearance of a pair of patient's boots. The end result was the traditional cautious, repressive, sullen attendant. This must be changed. Promotion should, of course, be by merit (as it already is in many hospitals) but it should not be by merit in examinations alone but by merit in patient management. Those nurses who develop therapeutic groups among patients or who take the lead in new experiments should find that this leads to promotion, whereas those who hang back from such innovations find themselves unsuccessful. There are also negative sanctions. Punishment is alas necessary in human organizations; the staff will watch with great care to see what things the new administrative therapist regards as bad. Any reprimand should be related to the therapeutic goals of the community.

The therapist must fulfil the functions of spokesman and leader of the therapeutic community. He should set goals and coin slogans; he must speak up for the community when their policies come under criticism; he must speak to the powers in the land—the Ministry of Health or the Commissioner for Mental Hygiene; he must also explain their work to the local community. He must ward off the attacks of

those who wish to limit or damage the freedom of the therapeutic community after such unavoidable happenings as accidents, deaths, drunken brawls or illegitimate babies, and he must plead for the money needed for staff, new buildings and other developments. He must judge when to pass on to the group the anxiety that these pressures engender and when to contain it within himself.

An important sphere of work is the barrier between the hospital and the community. Goffman(4) has pointed out that the traditional mental hospital is a total institution shut off from the outside world and living its own strange bizarre life with not only a wall round it but a real psychological barrier against staff going out and visitors, Press and others coming in. All that can be done to break this down is to the good. Staff living out of hospital and taking an active part in the life of the community, visitors coming into the wards of the hospital, patients going out to work in surrounding factories, voluntary workers coming in and taking part in the clubs and socials of the wards are all moves that tend to equate the standards of the outside world and those of the hospital community.

Administrative therapy in an established therapeutic community shows certain differences. All the above principles apply but much of the ground work will already have been done. The administrative therapist will be doing his work in groups, pulling together colleagues of all levels who are anxious to contribute and to make a place where patients can progress and recover. Many decisions will be made by the groups, and the therapist will be the instrument to carry them out. His main task will be to maintain the therapeutic atmosphere, to see that the community does not become diverted towards other aims or its enthusiasm dissipated. One medical superintendent once said "Do something new every three months ! It doesn't matter what you do, but do something new and keep them thinking !" The method was authoritarian, but the idea valuable ; there should always be new moves and developments afoot within the community so that it does not sink, as any group working with long stay disorders may, into dull dreariness. It is not necessary for the administrative therapist himself to have bright ideas. In the open communications of the therapeutic community new ideas are forever coming up. The administrative therapist's task is not to be a creator but a selector, seeing which projects are to be encouraged and given scope and which deferred ; he acts like a telephone operator, selecting those communications which are of immediate value and passing them through, choosing which are to wait for a time and which should be ignored.

The administrative therapist has a constant scanning duty to perform ; he must maintain some form of contact with all levels and sections of the therapeutic community and feel and know what is going on in all groups, even those with which he has no direct communication. It is said that the best manure is the foot of the farmer and in the same way administrative therapists should constantly be moving through the unit listening to all and knowing how things are going. Parkinson(5) under the name "injelititis" has described brilliantly the condition of sagging morale in a department. The administrative therapist must forever be on the look out for incipient injelititis in parts of his organization. When he finds it (as he will) he must at once try to assess what is happening and why things are going amiss. If there are grievances he can attempt to put them right ; an organization in a state of demoralisation is, however, always full of grievances and often the best thing is not to attempt to put right the grievances that are alleged but seek immediately a new goal to which the disspirited can turn their energies. At other times an attack on the organization can be therapeutic. Sivadon(6) believes that an attack on a public grievance can be a valuable rallying point to arouse constructive enthusiasm and says that he is glad that there is "always something wrong" in a hospital.

Valuable therapeutic developments often come from groups of patients and staff who are moved to attempt some group activity. The administrative machine may attempt to crush these, especially if they appear to be an attack on the existing order. It is a most important function of the administrative therapist to check the machine or the

frightened wrath of the criticised administrator, and to act as an umbrella over the tender developing plants of group activity so that they may take root and flourish. In particular he must ward off the attempts of the tidy-minded administrators, auditors and others who are only too ready to swathe any new development in red tape until it wilts and dies.

There are certain built-in tensions to which the administrative therapist must give constant attention. He must constantly bring professional groups together and try to get them to cooperate, but if he is wise he will recognise that there are certain tensions that can only be accepted and minimized; for example, the tensions between the full-time trained nurses and the part-time untrained nursing assistants, the tension between occupational therapists and women nurses attempting to activate the same group of patients, the tension between male nursing staff and garden staff and the general tensions between clerical and therapeutic staff. It is better to accept these than to pretend they do not exist and at certain times such as the Annual Sports, they can be used to stimulate rivalry and to enliven the proceedings.

SUMMARY

Further aspects of Administrative Therapy are explored. Some of the methods to be used in transforming a custodial into a therapeutic institution are discussed and also methods of maintaining the momentum of an established therapeutic community.

BIBLIOGRAPHY

1. Belknap, I. : Human Problems of a State Mental Hospital. London : McGraw Hill, 1956.

2. Clark, D. H. : Lancet, 1 : 805, Apr. 19, 1958.

3. Cummings, J. & E. : Social Equilibrium & Social Change in the Large Mental Hospital. *In* The Patient and the Mental Hospital. Glencoe, Ill. : The Free Press, 1957.

4. Goffman, E. : The Characteristics of Total Institutions. *In* Symposium on Preventive and Social Psychiatry, Walter Reed Army Institute, April 1957. Washington : Government Printing Office, 1958.

5. Parkinson, C. N. : Parkinson's Law. London : John Murray, 1958.

6. Sivadon, P. : Techniques of Sociotherapy. *In* Symposium on Preventive and Social Psychiatry, Walter Reed Army Institute, April 1957. Washington : Government Printing Office, 1958.

7. Taylor, F. K. : Brit. J. Med. Psychol., 31 : 153, 1958.

8. 3rd Report of the Expert Committee on Mental Health, World Health Organization, Geneva, 1953.

BEHAVIORAL CHANGES DURING HYPOTHALAMIC OR LIMBIC STIMULATION IN THE MONKEY [1, 2]

LORNE D. PROCTOR, M.D., ROBERT D. KNIGHTON, M.D., JEROME LUKASZEWSKI, M.A., AND JOSE BEBIN, M.D.[3]

This presentation is a sequel to one given in April, 1958(1), in which the reticular formation primarily was the site of stimulation. Such stimulation produced changes in consciousness, genital responses, hemiballismus, rage responses and finally yawning. In the present report we have extended our observations of behavioral and depth EEG changes related to stimulation by electrodes in the reticular formation, the hypothalamus and limbic system.

TECHNIQUE

Our present electrodes are a modification of the Jasper-Delgado type, consisting of 4 strands of #50 platinum-tungsten Teflon covered wire. The tips are placed approximately 2.5 mms. apart in the vertical plane, bared for 0.5 mms. and the most distal tip bent into a hook. The assembly of 4 wires is enclosed in a polyethylene tube of just sufficient diameter to prevent the wires moving in vertical relationship to one another, and the bared ends (and the distal hook) arranged to protrude through the polyethylene tubing. The electrode placement is made using a Universal Stereotaxic instrument (Baltimore), and a #22 gauge lumbar puncture needle-shaft acts as the electrode carrier. The hook engages in the opening at the tip of the lumbar puncture needle-shaft, which shaft is held in the chuck of the stereotaxic instrument's carrier. On reaching the desired placement in the brain, merely withdrawing the lumbar puncture needle allows the electrode to remain "hooked" into the point of placement in the brain(2). This provides 3 sets of bipolar electrodes in the vertical plane for each multipolar electrode placement. The poles of the electrodes were designated A, B, C, and D ; A designating the pole at the tip of the electrode.

The electrode leads are firmly fixed as they pass through the skull, by a nylon clip screwed into the skull, and are carried under the scalp to a nylon connector plug attached to the posterior portion of the monkey's skull. This technique has provided a satisfactory means, during the past 6 years, of obtaining depth recordings and for stimulating the various areas of the reticular and limbic systems. Resting depth EEG recordings are now consistent from any selected area in these systems over periods of as long as one month. A method has been devised so that we can now record 3-7 mms. distance from the site of stimulation in the reticular or limbic systems without stimulus artefact or significant blocking(3).

The parameters of stimulation which produce behavioral changes with a minimal chance for concomitant "Jacksonian-like" motor responses has been determined in our previous investigations(1). With this in mind a Grass S4B stimulator was used to supply monophasic square top impulses, with a duration of single impulse 0.20 msec., a delay between impulse trains 0.015 msec., and only the voltage, frequency and polarity of the stimulus varied.

The monkey is seated in a chair with a "corset" restraining him from hips to lower ribs in front, and his hands are limited by cords attached by soft metal cuffs above the wrists or by a plastic collar about the neck. He thus is able to perform manual movements for psychometric testing, *etc.*, but cannot reach above his head to pull at the electrode connections to the EEG unit or the stimulator.

The EEG is analysed as to frequencies by an Offner frequency analyser, which analyses in 10 second intervals the output of any one channel of an Offner transistor EEG unit.

The behavioral changes are recorded by

[1] Read at the 116th annual meeting of the American Psychiatric Association, Atlantic City, N. J., May 9-13, 1960.

[2] This investigation was supported by National Institutes of Health Research Grant M-2474.

[3] From the Department of Neurology and Psychiatry and the Division of Neurosurgery, Henry Ford Hospital, Detroit, Mich.

both still photographs and 16 mm. colored movies.

The monkey is tested psychometrically, using the oddity test(2), for any change in ability to perform a learned procedure as a result of stimulation.

We have been able to make 4-5 separate multiple electrode placements in a number of our animals. These electrodes remain in place over a period of 2-4 months, at the end of which time the animal is sacrificed and the brain perfused with 10% formalin. After 2-3 weeks fixation the brain is sectioned and examined macroscopically and microscopically for confirmation of electrode placements. In many cases only the odd round cell constitutes the tissue reaction along the path of the electrode and at the electrode sites.

Stimulation of electrodes placed outside of the reticular and limbic systems have allowed control observations in our investigation.

In the interest of space only 2 sample protocols on stimulating in the hypothalamic and limbic areas are reported (of the 6 protocols recorded).

OBSERVATIONS

Hypothalamic Stimulation

Monkey #19.—Electrode location: (pole D not connected). Pole A was situated in the left lateral wall of the third ventricle, and pole B was 2.5 mm. above in the left dorso-medial nucleus of the thalamus.

Stimulation between A & B at 400 cps, polarity #1, and 8 volts resulted in bilateral pupillary dilatation, the left pupil recovering during stimulation, frequent gutteral cries and the arrest phenomena.[4] The animal made no correct choices (0/6) on the oddity test during stimulation as compared with 4/6 prestimulation. The quivering (anxious) mouth response appeared throughout the period of stimulation. Reversing the polarity merely reduced the degree of response.

Electrode location: Pole A was situated in the left lateral wall of the hypothalamus, and pole C in the left nucleus ventralis anterior of the thalamus (pole B in the left dorso-medial nucleus of the thalamus).

Stimulating between A & C or between B & C at 400 cps, polarity #1 and 6 volts produced the same response described on stimulating between A & B except it was milder in degree.

It is noteworthy that 30-60 minutes after the final stimulation in the above hypothalamic areas (Monkey #19), when the animal was back in his home cage, he appeared confused, uncomfortable and frequently lay down, cried and would not take food. This reaction disappeared later in the day.

The next day using polarity #2 and increasing the voltage to 15 through 30 volts at 400 cps, between poles A & B, there occurred maintained bilateral pupillary dilatation, and at 32 volts the animal ejaculated, urinated and had a mild right Jacksonian episode. Immediately following this last stimulus, the animal was blind and this impaired vision continued for approximately 5 days. Following recovery of vision, stimulation using 400 cps, polarity #2, and 21 volts between poles A & B was required to produce confusion, no doubt due again to visual impairment and anxiety. The animal showed no arrest phenomena nor anxiety below 21 volts. One month after this latest stimulation, restlessness, anxiety, and the arrest phenomena occurred using only 9 volts between poles A & B. Stimulation between poles A & B, with voltages just below those producing pupillary dilatation, invariably resulted in frequent guttural cries during the stimulation period.

The depth EEG patterns, at rest, in the areas of the hypothalamus examined (Figure 1), showed a predominance of slow wave high amplitude activity (1.5-7 cps). This pattern changed on stimulation of the opposite hypothalamus, showing a reduction in the amplitude of the slow wave activity, but 20-30 seconds post stimulus the EEG pattern returned to the prestimulus pattern. Our small number of observations of this phenomena would not allow us to draw conclusions as to its significance.

Incidentally, between electrodes, poles A & D located in the left anterior hypothalamus, a 35 cps discharge was recorded at rest (Figure 1), and was found to increase in extent (not amplitude) on stimulating the opposite hypothalamus. The onset of these 35 cps bursts occurred at various stages of respiration, and were thought to

[4] Arrest phenomena indicate a behavior characterized by impaired awareness. The animal may only show this defect by its inability to perform a learned task correctly, or the impairment may be so severe a trance-like state exists so that the animal shows no reaction to its environment.

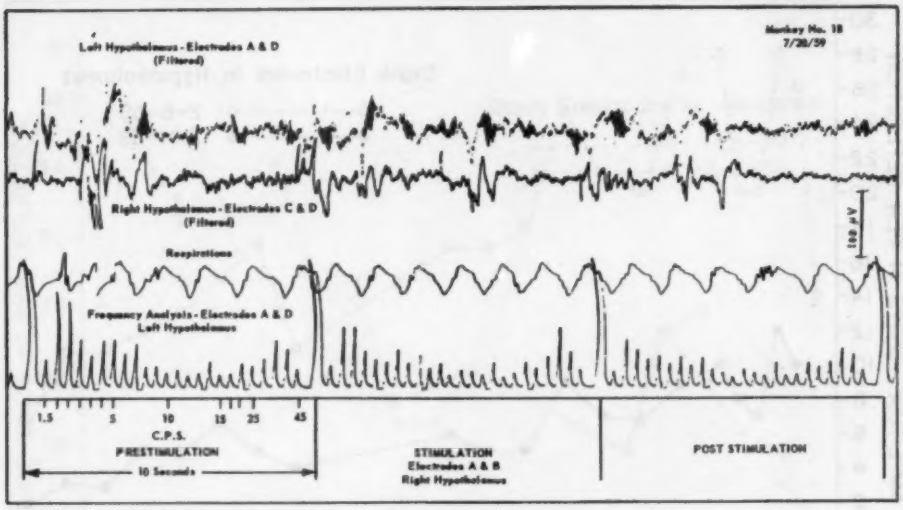


FIGURE 1

SAMPLE DEPTH EEG FROM RIGHT AND LEFT HYPOTHALAMUS. FILTERING HAS ELIMINATED STIMULATION ARTEFACT.

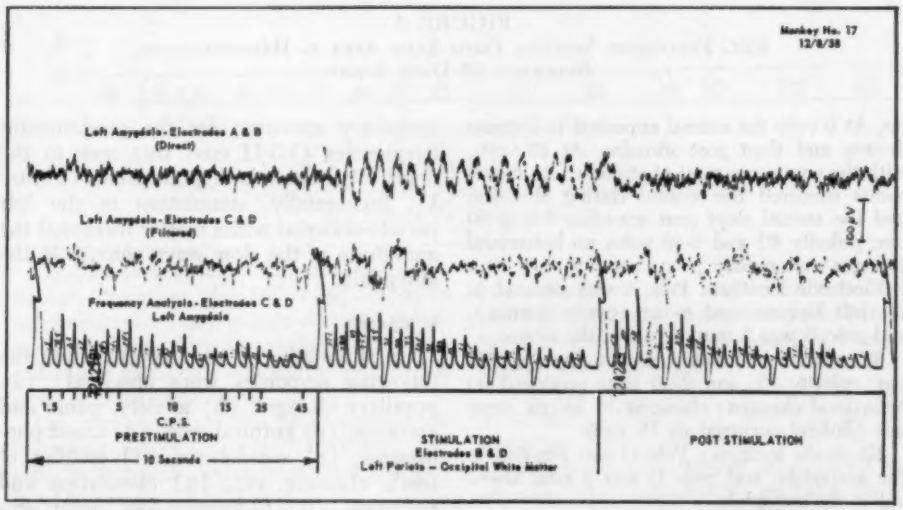


FIGURE 2

SAMPLE DEPTH EEG FROM LEFT AMYGDALA. NOTE EFFECT OF FILTER.

be discharges via the anterior hypothalamic pathways of the olfactory tract.

Limbic System Stimulation

Monkey #18.—Electrode location : (poles C & D not connected). Pole A was situated in the anterior tip of the right temporal lobe (hippocampal gyrus), and Pole B was 2 mm. above in the right uncus (periamygdaloid area).

Stimulation between A & B using 400 cps, polarity #1 and 4 volts resulted in the animal becoming restless, but slept seconds post stimu-

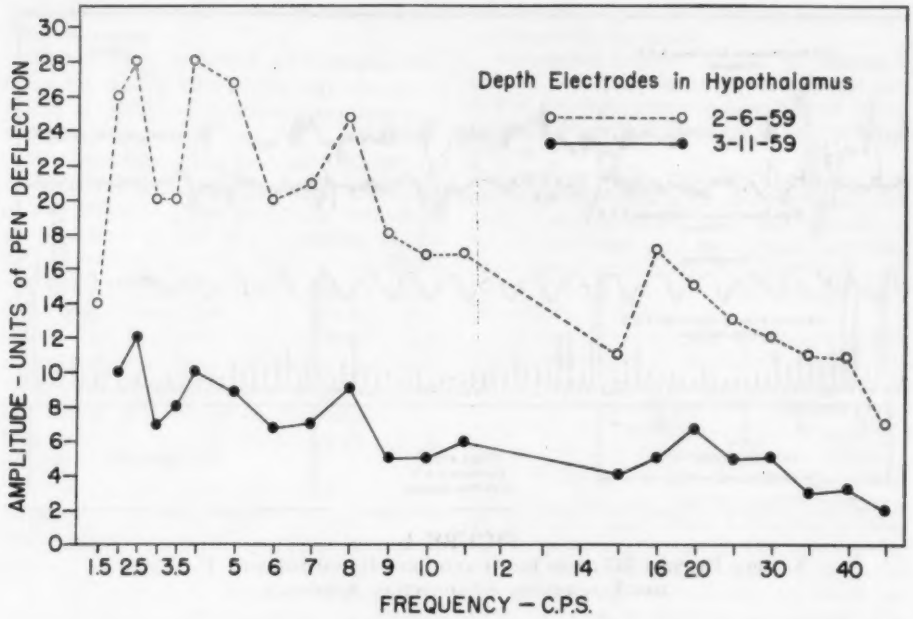


FIGURE 3
EEG Frequency Spectra From Same Area in Hypothalamus Recorded 33 Days Apart.

lus. At 6 volts the animal appeared to become drowsy and slept post stimulus. At 10 volts, with the commencement of stimulus, lip movements occurred but ceased during stimulus, and the animal slept post stimulus. Using 30 cps, polarity #1 and 2-40 volts, no behavioral changes were noted.

Electrode location : Pole A was situated in the left hippocampal gyrus (upper portion), and pole B was 2 mm. above in the uncus.

Stimulation between poles A & B using 400 cps, polarity #1, and 2-20 volts produced no behavioral changes ; changing to 30 cps, some eye blinking occurred at 15 volts.

Electrode location : Pole C was situated in the amygdala, and pole D was 2 mm. above still in the amygdala.

Stimulation between poles C & D using 400 cps, polarity #1 and 6 volts produced gritting of the teeth ; at 10 volts both pupils dilated, and at 15 volts both eyes blinked. Changing to 30 cps, at 12 volts, blinking occurred and at 15 volts blinking of the eyes and chewing movements were noted.

In Figure 2 the depth EEG pattern at rest, from the left amygdala, suggests a broader frequency spectrum for the predominant frequencies (1.5-11 cps) that seen in the depth EEG from the hypothalamus (Figure 1). Incidentally, stimulation in the left parieto-occipital white matter increased the amplitude of the slow wave activity in the amygdala.

SUMMARY

On stimulating in the hypothalamus, the following responses were observed : (a) pupillary changes, (b) anxiety, panic and agitation, (c) guttural cries, (d) arrest phenomena, (e) somnolence, (f) gritting of teeth, chewing, *etc.*, (g) ejaculation and urination, (h) Jacksonian-like motor episodes, (i) head turning and (j) loss of vision.

On stimulating in the limbic system, the following responses were observed : (a) alerting, (b) trismus, (c) gritting of teeth, (d) smacking, licking and chewing, (e) guttural cries, (f) pupillary changes, (g) eye blinking, (h) Jacksonian-like motor episodes and (i) lethargy, post stimulus.

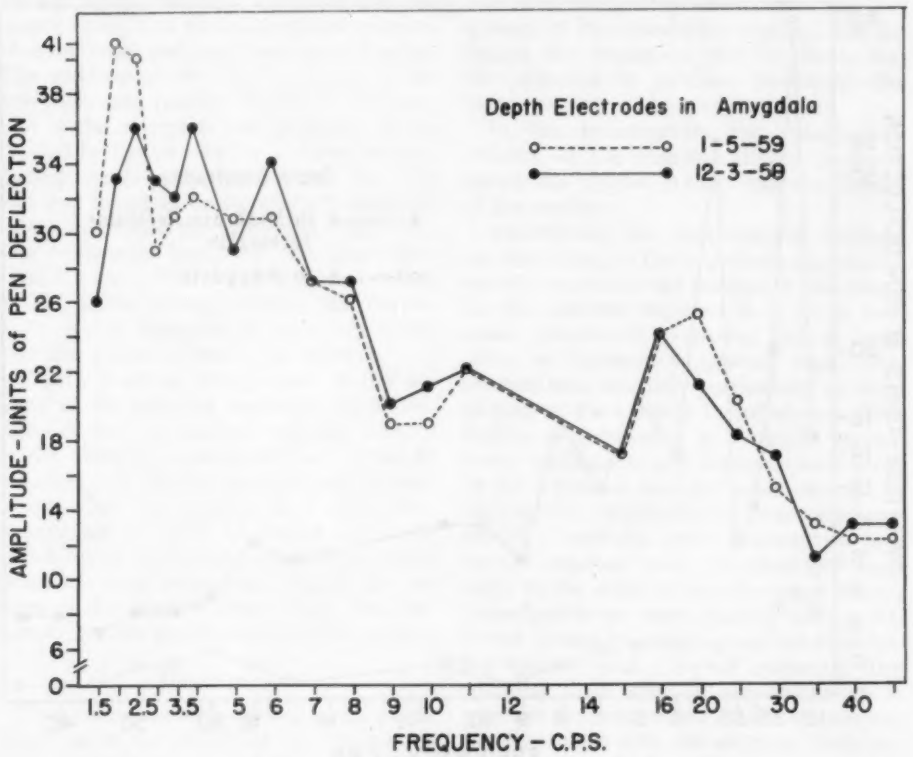


FIGURE 4
EEG Frequency Spectra From Same Area in Amygdala Recorded 29 Days Apart.

On stimulating in the mesencephalic reticular formation, the following responses were observed: (a) spastic chewing movements and inability to swallow food, (b) gritting of teeth, (c) confusion—even to the point of trance-like states.

On stimulating in the basal nuclei, the following responses were observed: (a) loss of conjugate deviation of eyes and (b) head turning.

On stimulating in the parieto-occipital white matter, the following responses were observed: (a) pupillary changes, (b) marked conjugate deviation of eyes with head and body turning, (c) bilateral nystagmus, (d) tremor and (e) post stimulus, chewing movements and hippus occurred.

The study of the EEG patterns at rest or following stimulation in the limbic, hypothalamic and mesencephalic areas pointed up the problem of EEG evaluation, and after much thought and consultation we concluded the use of frequency analysis offered the most practical means of comparing our EEG findings.

The use of a frequency analyser allows description of the EEG record in two demensions only; the frequency and the amplitude of the signals at a given frequency. The frequencies are fixed by the design of the analyser, and are noted in Figures 1 and 2. The EEG activity is analysed for a finite period of time (10 seconds) and this information is stored, by means of capacitors, that are later discharged so that a graphic record is obtained of the total amount of activity—in terms of amplitude—at each of the frequencies analysed during this 10 second period. It can be seen that certain compo-

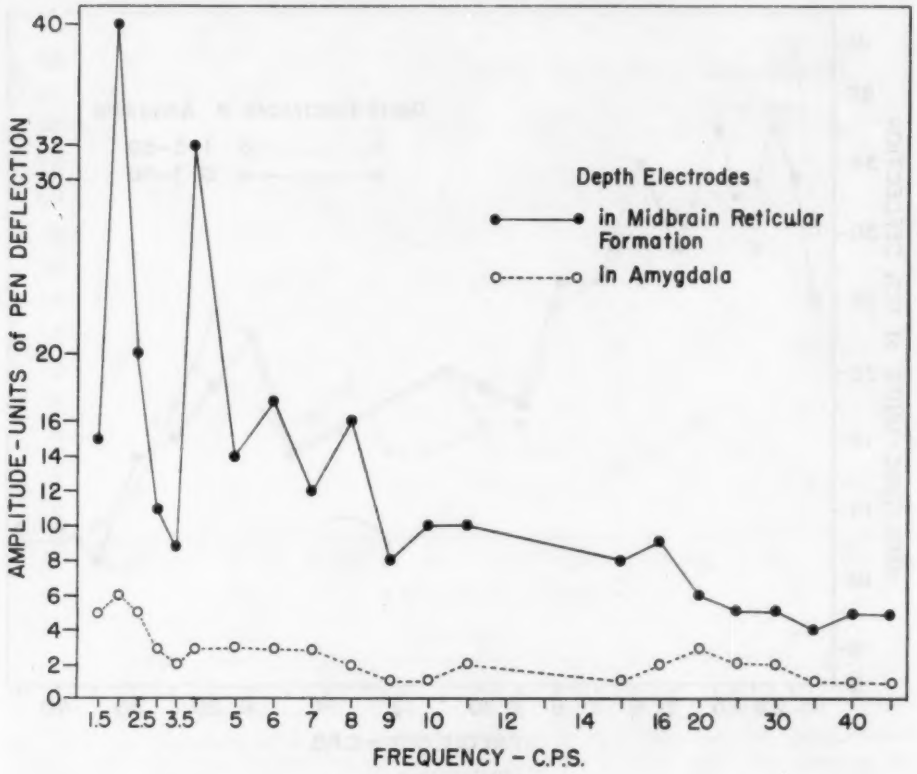


FIGURE 5

COMPARISON OF EEG FREQUENCY SPECTRA RECORDED FROM MIDBRAIN RETICULAR FORMATION AND FROM AMYGDALA.

nents of the total signal are lost by this analytical method ; namely, the phase relationships of the various frequencies, and the time of occurrence of a particular frequency during the 10 second interval. With full appreciation of the limitations of this analysis, we are reporting a preliminary description of our EEG findings.

The electrical activity of the hypothalamus appeared to be stable with regard to the inter-relationships of the various frequencies one with the other. This can be seen in Figure 3 which allows comparison of the amplitude of the activity at the various frequencies. The activity during the initial recording (2/6/59) had a much higher amplitude than did the activity recorded later (3/11/59), however, the pattern of activity remained relatively invariant. Indeed, when the amplitudes of the signals at the given frequencies were correlated, a value of 0.97 was obtained. This value was found to be statistically significant, and indicates that the amplitude shifts between the various frequencies on a given day were stable when compared to the shifts on another day. The confidence limits for the correlation based on a sample of 20 frequencies (N=20) are 0.92 to 0.99 with a probability of 95%. These figures indicate the range through which the correlation can be expected to vary on the basis of different samples, and show that the EEG patterns reported here are characteristic of the activity which generally would be found in this area under similar conditions.

Figure 4 indicates the EEG activity found in the amygdala area. It shows that

the activity on two days, approximately one month apart, was almost identical in terms of amplitude and the frequency spectra. The stability of the EEG patterns of the amygdala area (medial amygdala and junction of the amygdala and putamen) is indicated by the correlation of these two frequency spectra. This correlation was 0.94 and was found to be significantly different from zero beyond the 1% level of confidence. The confidence limits for this correlation (N=21) are 0.86 and 0.98 with a certainty of 95%. These findings confirm that the activity of the amygdala is relatively stable over this period of time (one month).

Figure 5 allows comparison of the activity of the reticular formation in the vicinity of the red nucleus with the activity in the anterior commissure just dorsal to the amygdala (limbic area). It can be seen readily that the signals, at a given frequency, are generally of greater amplitude in this region of the mesencephalic reticular formation than those eminating in the regions of the anterior commissure. The frequency spectra are also obviously dissimilar.

Discussion

There were no well defined limits established as to the extent of the stimulation fields about the various bipolar electrodes used in this investigation. It will be noted that several of the hypothalamic bipolar electrodes had one pole in the adjacent thalamus, and several of the limbic bipolar electrodes had one pole in the basal nuclei area. One pole of a basal nuclei bipolar electrode was situated in the preoptic-supraoptic region. However, the larger portion of the area between the poles of the above group of bipolar electrodes was in the region under investigation, *i.e.*, hypothalamus, limbic system, or basal nuclei area, and we, therefore, suggest the responses on stimulating by these electrodes were predominantly the responses of the hypothalamus, limbic system or basal nuclei region.

As noted previously(4), the changing of frequency of the stimulating impulse altered significantly the response both in degree and quality, and the characteristics of this alteration depended upon the area stimulated. No consistent response characteristic was seen to be dependent upon the frequency of the stimulating impulse, but the higher the frequency, the less likely was the stimulus to produce Jacksonian-like motor responses at a given voltage.

In this investigation, the changing of polarity of the stimulus altered predominantly the degree, rather than the quality of the response.

Anxiety was the most common response on stimulating in the hypothalamus, and by merely increasing the voltage of the stimulus the anxiety response in a given area could be altered to panic, and in some areas to agitation suggesting rage. This phenomenon was seen particularly on stimulating in the anterior hypothalamus. This finding is interesting as Hess(5) reports motor restlessness and flight response areas in the cat to be predominantly situated in the posterior hypothalamus (ergotropic centers(6)), and the more homeostatic protective response areas (trophotropic areas (6)) in the anterior hypothalamus. In our investigation we were dealing with a different species (monkey), and our stimulating impulse is of a higher frequency. The question does arise in our minds as to whether the parameters of the stimulating impulse might alter the response from any given area in the hypothalamus, making it possible to obtain a more extensive area from which these various responses (ergotropic and trophotropic) could be elicited.

Our previous observation of anxiety, panic and agitation on stimulating in the mesencephalic reticular formation(4) is in keeping with Hess(5) who reports the flight and motor restlessness responses can be followed on stimulating backwards "into the central gray matter of the mesencephalon."

Somnolence was produced by stimulating the anterior hypothalamus, an area not far distant from Hess's(5) "hypnogenous zone" that he places in the intralaminar nuclei region.

The oral responses included gritting of teeth, chewing movements, smacking of lips and licking. Only the smacking and licking responses were limited to limbic area stimulation, the remainder of the oral responses occurring on stimulation of the posterior hypothalamus, limbic areas or

mesencephalic reticular formation. An interesting variant of the oral responses occurred on stimulation of a limbic area, namely trismus. Another variant occurred on stimulating the mesencephalic reticular formation when, rather than trismus, the animal had difficulty chewing and swallowing food because of spasm of the muscles involved with these functions. The mouth could be opened, but with difficulty in this instance.

The arrest phenomenon progressing to trance-like states was a response common to stimulation of the hypothalamus and mesencephalic reticular formation areas.

The Jacksonian-like motor episodes observed occurred on using relatively high voltage for stimulation.

At this time we have no explanation as to the dynamics for the production of eye blinking during stimulation of the limbic area, nor an explanation for the production of the 5 day period of blindness following "high voltage" (32 volts) stimulation of the lateral portion of the hypothalamus.

We were impressed with the number of similar responses elicited by stimulation in either of two or even any of three of the systems investigated (hypothalamus, limbic areas and mesencephalic reticular formation). It would appear these systems have many ramifications each with the others. Pribram's(7) concept that multi-linked homeostats condition the responses from such areas as the "limbic end brain," and the reticular formation, providing negative and positive feed-back circuits, allows much speculation as to the variety of pathways through which stimuli occurring in either the limbic or reticular systems could be directed. These theoretical circuits could serve to explain the similarity of responses on stimulating at different areas in the brain.

Conclusion

Stimulation of various areas of the limbic and hypothalamic regions in the Macaca mulatta resulted in a variety of responses. These responses were compared with those obtained on stimulating areas of the midbrain reticular formation.

It would appear that "overlapping" occurs as to the function of the limbic system, the mesencephalic reticular formation and the hypothalamus, in view of the similarity of behavior patterns elicited by stimulating some areas in these three different regions.

The EEG patterns from the limbic, reticular (mesencephalic) and hypothalamic systems varied significantly so as to suggest that each system may function basically as an individual component system of the brain, probably influenced by ramifications one with the other. This EEG study is a preliminary investigation.

BIBLIOGRAPHY

1. Proctor, L. D., Churchill, J. A., Knighton, R. S., and Bebin, J. : Biological Psychiatry. New York : Grune & Stratton, 1959.

2. Proctor, L. D., Churchill, J. A., Knighton, R. S., and Bebin, J. : Henry Ford Hosp. Med. Bull., **6** : 266, 1958.

3. Van den Ende, H. : Henry Ford Hosp. Med. Bull., **7** : 174, 1959.

4. Proctor, L. D., Knighton, R. S., and Churchill, J. A. : Neurology, **7** : 193, 1957.

5. Hess, W. R. : Das Zwischenhirn. Basel : Benno Schwabe, 1949.

6. Gloor, P. : Arch. Neurol. & Psychiat., **71** : 773, 1954.

7. Pribram, K. H. : Review of theory in physiological psychology. *In* : Farnsworth, P. (Ed.), Annual Review of Psychology. Palo Alto : Annual Reviews, 1960.

THE PSYCHOTHERAPY THAT WAS MORAL TREATMENT [1]

ERIC T. CARLSON, M.D.,[2] AND NORMAN DAIN, M.A.[2]

INTRODUCTION

With the rise of inductive science in the 17th and 18th centuries, scientists and philosophers inevitably adopted a naturalistic approach to emotional illness as an earthly rather than supernatural sickness. The enlightened men of this hopeful era believed that the dramatic exigencies of the individual's life caused his illness, and that consequently the individual deserved sympathy, respect, and, most of all, assistance in conquering his life-produced situation. When this new attitude towards the disturbed person achieved wide acceptance among intellectuals at the end of the 18th century, modern psychiatry emerged as a medical specialty.

Medicine approached mental illness in the light of contemporary physiology : since it was a disease, it should respond to pharmacological treatment. At the same time, there was a growing understanding that other, nonmedical methods were also useful in treating the mentally ill. The stress laid on these new therapeutic approaches varied widely from writer to writer. Although most physicians employed pharmaceutical therapy, some even felt that all medication was superfluous.

The non-medical methods were known after the 1750's by a variety of terms : "management," "government," "regimen," and, referring specifically to the hospital scene, "internal police." When Philippe Pinel's famous 1801 work, *Medico-philosophical Treatise on Mental Alienation, or Mania*, was translated into English in 1806(1), the phrase "moral treatment" (a literal translation of *"traitement moral"* which persisted in use into the 20th century) replaced the earlier terms. This shift in nomenclature emphasized that nonmedical procedures were employed for their therapeutic effect and were not designed simply out of kindness or concern for the attendants' convenience. Broadly construed, "moral treatment" included all nonmedical techniques, but more specifically it referred to therapeutic efforts which affected the patient's psychology. Esquirol recognized this narrower definition : "Moral treatment is the application of the faculty of intelligence and of emotions in the treatment of mental alienation"(2).

The most famous symbol of this new therapy was the almost simultaneous unchaining of mental patients throughout Europe in the 1780's and 1790's. Humanitarianism was the major motivation behind this action, but some physicians, such as Pinel, released their patients partly to observe the natural course of the illness and, on the basis of increased knowledge, initiate more effective treatment.

"Moral treatment" consisted principally of what we might now call *milieu* therapy. Most doctors favored hospitalization for the severely ill patient. In order to break associations that were painful or that played a causal role in the illness, family and friends were usually prohibited from visiting the patient, as, of course, were the idly curious. Although patients were classified and separated according to sex, degree of illness, and socio-economic background, they all followed an orderly routine of life within the hospital. Distraction by work activity was increasingly recommended, as were amusements, which increased in number and variety over the years. The use of religious teaching varied from hospital to hospital, and the application of educational programs came only in the 19th century.

In the psychiatric literature of the time, one can also find a slight but growing discussion of how the doctor and his associates should deal with the patient. It is largely to those aspects of the doctor-patient transactions as they evolved between 1750 and 1840 and as they are presented by the out-

---

[1] Read at the 116th annual meeting of The American Psychiatric Association, Atlantic City, N. J., May 9-13, 1960.

The authors express appreciation to Evelyn A. Woods for her assistance in the preparation of this paper.

[2] From the Department of Psychiatry of the New York Hospital (Payne Whitney Clinic), Cornell University Medical College, New York, N. Y.

This investigation was supported in part by a research grant (M-2146) from the National Institute of Mental Health, U. S. Public Health Service.

standing European and American psychiatrists of the time that this paper will be devoted.

DOCTOR-PATIENT RELATIONSHIPS

Perhaps the most significant feature of the doctor-patient relationship in these years was the gradual recognition by physicians that successful therapy required more active participation by the patient. The patient's attitude toward the asylum staff, especially the physician, received increasing attention. The ideal of what the patient's relationship with the physician should be gradually shifted from one in which the doctor was the active agent working upon an essentially passive subject to one where the patient became a partner, although a subordinate one, in the therapeutic process. For the patient to play an active role in his own treatment he must not be intimidated into passivity by the physician and other hospital personnel. Nor should he be treated as an anonymous member of a diagnostic category, but as an individual and interesting personality. Since incentives were essential to accomplishment of the desired change in the patient's attitude, systems of punishment and reward developed. This whole therapeutic process implied, moreover, a greater reliance upon the rational powers of the patient as a means of improving doctor-patient contact, and this reliance in turn stimulated an emphasis upon conversation, frank discussion, and general attempts by the doctor to re-educate the patient.

For the sake of simplicity and clarity, the following presentation will deal with the various stages as a logical progression, although, in fact, overlapping concepts and retrogressive tendencies were always present. Three essential themes are evident: 1. The nature of the doctor-patient relationship, 2. The development of self-control and the elimination of symptoms through reward and punishment and the use of emotions and reason, and 3. The practice of psychotherapy and its relationship to the patients' and doctors' personalities. Although this paper stresses the techniques used by physicians, it should be pointed out that in this period (1750-1840) lay superintendents and attendants frequently played a more prominent role in nonmedical treatment than did the doctors. The material presented here represents only a small fraction of what was written, for most of the discussions on treatment were devoted to physical and pharmacological methods and to occupational and recreational therapy. The paper is based largely, moreover, on hospital experience.

As might be expected, especially in the years before 1800, one of the dominant themes in treatment was the need to gain ascendancy over the patient. In this way the patient could be led to control his behavior; such control seemed to be the first step towards cure, if not synonymous with it. At first there were traces of the former brutality. William Cullen(3) (1790) sanctioned the use of blows provided the patient understood their intent, and Benjamin Rush(4) (1812), citing a method of taming refractory horses in England, recommended that the patient be kept standing for an entire day.

These methods soon gave way to milder methods, with demonstrations of authority. A striking example was the approach used by Pargeter(5) in the 1790's, who thought treatment would be useless unless the physician gained supremacy in his first encounter with the patient. Suddenly flinging open the door of a patient's room, he would rush inside, catch the patient's eye, and thereby stare him down, so that he frequently achieved complete dominance without speaking a word. Pargeter claimed this technique had never failed him, but warned that it might not always work, and that therefore it was essential to obtain a case history before attempting to use this procedure. Once he had gained ascendancy he perpetuated it by treating the patient mildly and by attempting to win his confidence. He emphasized that too severe compulsion would be cruel and that it would arouse violent reactions in the patients and decrease their manageability.

Gradually such diverse physicians as Monro(6) in 1758, Daquin(7) in 1791, Chiarugi(8) in 1793, and Pinel in 1801 came to suggest a less authoritarian approach. They emphasized that firmness should be tempered with kindness and that control was possible without abuse. Pinel

believed firmly in coercion where needed, but preferred the psychological effect of a show of force to its actual application.

After 1800 medical writers broadened the method of achieving dominance over the patient. Although Cox(9) in 1806 mentioned that some patients needed threats, he insisted that firmness and tenderness be the rule; he emphasized that kindness bred confidence, and that by releasing a patient from mechanical restraint the doctor might well win his devotion. In the same year Trotter(10) stressed the patient's need to sense the physician's trust in him. In 1809 Haslam(11) dismissed the effectiveness of the penetrating eye, stating that he had never found anyone willing to test this method on a furious maniac. He emphasized instead that patients tended to respect those who understood their complaint, and that therefore one could gain ascendancy through sympathy and understanding. He sanctioned the use of authority when needed, stating that one might act but should never threaten, and that setting an example was often effective.

In later years there was a shift to a relationship based on the subtleties of friendship and a consequent recognition of the value of tact in therapy. It was mentioned by Chiarugi in 1793 and by Heinroth(12) in 1818, and especially stressed by Burrows (13) in a perceptive account in 1828. In 1838 Ellis(14) proclaimed that women were superior to men in dealing with mental patients because of their greater tact.

With the emphasis on teaching the patient to control his own behavior, the question of reward and punishment inevitably arose. As early as 1795 Ferriar(15), who believed that a patient must minister to himself to achieve a cure, suggested setting aside a certain room for those convalescents whose behavior had become acceptable. Haslam suggested a few years later that the doctor should punish the rational but uncooperative patient by confining him to his room or forbidding him contact with other convalescents. He advocated immediate punishment, preferably ordered in front of other patients because, since the culprit tended to be awed by spectators, he would submit more readily. Haslam considered this type of coercion indispensable, since self-control was essential for recovery and since fear of punishment deterred both the rational and irrational person.

This punitive technique was also used in the 1820's at the Friends' Asylum in Philadelphia(16); a patient's privileges would be curtailed for lack of self-control, but usually restored to him immediately if he evinced remorse for his behavior and promised to correct his errors. In 1833 Allen(17) emphasized the need to foster a patient's self-command by shaming him for misbehavior. He recognized that this course of action might encourage patients to conceal their illness, but felt that this situation was acceptable as long as the doctor was not deceived. Two years later Prichard(18) introduced the idea of making another person the agent of punishment and repression, so that the doctor could remain a protective figure, kind and indulgent.

Such emphasis on self-control signified training the patient to control his emotions, usually by exercising his will-power. Emotions aroused by the therapist might also help the patient; for example, in 1813 Samuel Tuke(19) cited the use of mild fear, as in the educational upbringing of children, but praised more highly the encouragement of such feelings as hope and self-esteem.

There was also a concept in therapy of the manipulation of emotions in another fashion. This method was often termed the use of "contrary passions" and was illustrated by Battie(20) in 1758, when he said that fear could be used to combat anger and that joy could dominate sorrow. But he warned that since it was difficult to predict results, only the doctor should decide whether this method was safe and advisable. In 1789 Harper(21) spoke out against any sudden check of the patient's passions, and instead recommended gradual replacement with other, more pleasant emotions. For example, the doctor should try to amuse the grief-stricken or depressed patient and should trust and console the jealous one. Pinel suggested providing pleasant surroundings and a cheerful atmosphere for the melancholic; his student Georget(22) thought that the doctor should try to impart courage to this type of patient. In 1803 Reil(23) proposed an early

form of psychodrama to arouse proper feelings in the patient.

A gradual shift to the use of milder emotions is evident in Cox's suggestion that other emotions besides fear be used, and in Allen's statement that if one must use fear one should do so only by removing sympathy. The doctors of the 1790's brought increased hope of cure to their patients, but it was only later that writers such as Trotter, Pisani(24), and Browne(25) emphasized the actual therapeutic value of hope.

Accepting the contemporary tripartite division of personality, Heinroth in 1818 advocated changing and stabilizing the emotions, giving direction to the will, and correcting the intellect. The writers before 1800 generally believed that these goals were seldom achieved by appealing to the patient's reason. Cullen pointed out that it was of little value in hypochondriasis, Perfect(26) made the same point regarding treatment of religious melancholy, and all physicians concurred in acknowledging the futility of reasoning or arguing with a patient about his delusional ideas. Of the various alternative methods which might serve to banish delusions and hallucinations, one of the most popular was a form of suggestive trickery termed "pious frauds" by Cullen and "strategems" by Pinel. The following is an example: a woman who thought she had snakes in her stomach was given an emetic; when she vomited, some real snakes were introduced into the basin and she was thereby convinced that she had finally expelled them. There were certain dangers in using this method, as Pinel recognized. He cites an initially successful strategem which was followed by a complete relapse when the patient learned it was a hoax.

After 1810, however, physicians came to frown on the use of strategems, agreeing that one should never deceive a psychiatric patient. They did continue to employ other types of suggestive therapy, as in the use of placebos by William Cullen and the superintendent of the Friends' Asylum. Interestingly enough, we have as yet found no direct evidence that the principles of mesmerism influenced the writers discussed.

Ideas about how to conduct what we now call psychotherapy—the conversational transactions between the doctor and the patient—developed slowly. Beginning about 1790, there was increasing agreement that the doctor should know his patients individually and intimately by associating closely with them. Hahnemann(27) in 1792 spent two weeks studying a patient before embarking upon therapy. In 1793 Chiarugi requested referring doctors to provide case histories, and Pinel, Cox, and Heinroth also strove to obtain detailed records of their patients. Heinroth asserted that psychopathology would vary with age, sex and temperament, and that therefore therapy should vary accordingly. The individual personality was investigated more deeply by the phrenologists such as Combe(28) (1831) and Gall(29) (1825), who made the very perceptive suggestion that the physician might learn much by observing his patient's behavior and by encouraging him to talk about his past life.

The earlier psychiatrists were probably following association psychology when they stressed diverting the patient from his painful thoughts. This approach led to a therapy of distraction and repression which contributed to the widespread use of milieu therapy. Harper in 1789 suggested that ideas close to the original cause of the illness should not be mentioned or indulged, but that pleasant new ideas should be substituted for them. He also emphasized the necessity of breaking up habit patterns, but did not give any hints as to how this might best be done.

The doctors after 1790 recognized that conversation had certain beneficial effects. In 1795 Ferriar reported a cure that resulted from reflections initiated by a doctor's visit, and Allen mentioned a similar phenomenon much later. What Hallaran(30) in 1818 called "the business of conversation" was generally considered important, but the early physicians gave few rules about how to conduct this "business." In 1809 Haslam suggested that in order to learn more about the patient the doctor should not interrupt him too often, and most doctors agreed that one should avoid irritating the patient or bringing up painful ideas; for example, Burrows (1828) urged that defects in

memory or speech not be called to the patient's attention.

After 1830 the use of conversational therapy was discussed more fully. In that year, Conolly(31) stated that the "great business" of the doctor was to instruct, amuse, soothe, converse with, and advise his patients. In 1833 Allen wrote a little more extensively than most doctors on this subject. He praised "intellectual therapy" and mentioned some of his own methods. He saw his goal largely as one of making "truth visible" to the insane, a purpose previously mentioned by Chiarugi and Reil. Allen maintained that with intelligence and insight the doctor could trace his patient's peculiarities to their origin. He gives an example of his treatment of a depressed patient: summoning the man to him each evening, Dr. Allen related his own life history in detail, keeping the patient's attention by leaving off each time, like Scheherazade, at a point of great interest, and at the same time guiding the patient by subtly introducing his views about the patient's bad habits and the best way to overcome them.

The rise of phrenological thought in the 19th century introduced another concept into psychotherapy. In 1831 Combe emphasized that one should first know human nature in general and then use phrenology to understand the individual patient's personality; thereby a type of analysis came into being. The phrenologist-physician tried to help the patient understand that he had become ill because some of his motivations and faculties (associated in theory with specific areas of the brain) were over- or under-developed. With the aid of his physician the patient was to repress the overactive faculties and at the same time strengthen the weaker ones, so that his personality would come back into balance and he would recover his health(32).

If an interest in the patient's fundamental personality was a relatively later development, so was any real insight into the relevance of the doctor's personality, although there were a number of statements about how the doctor should behave towards his patients. In brief, he should be intelligent, courageous, firm but kind, understanding, hopeful, tender, cheerful, and upright. Perhaps the first recognition of variations in a doctor's personality is Haslam's admission that he lacked the lightning in his eye, the thunder in his voice, and the majestic bearing that some considered requisite for the ideal psychiatrist.

Physicians recognized that therapeutic acumen was something of an art. Haslam said that only by trial and error could the doctor hope to acquire what we today would call an effective psychotherapeutic approach, and that this could not be taught and therefore would perish with the individual doctor. Because of this difficulty in communication, it is likely that each doctor developed more techniques for dealing with his patients than appear in the literature. Both Cox and Haslam stressed that before he could hope to gain the confidence and respect of the patient the doctor must learn to control himself and not become agitated or upset. Trotter pointed out that this control was difficult for a young doctor to learn, and that he needed knowledge about human nature and extensive study of living man before he could develop this art. Burrows stated that tact was the pivotal factor in the doctor-patient relationship, and that it was an intuitive art that could not be taught, although it might be elicited by chance and then developed by experience. He also stressed the need for delicacy and the value of intelligence in approaching the patient.

Allen seems to be the only doctor of this period to recognize and write about the doctor's personal response to his patients. He recorded a case of a woman who so exhausted him emotionally that he himself became depressed and was forced to transfer her to the care of his wife. This woman also overwhelmed his wife at times, so that Mrs. Allen was forced to threaten her with separation and transfer unless the patient stopped complaining.

Discussion

The various therapeutic approaches discussed here arose from associational or sensational psychology, from the older faculty psychology and its newer modifications by the Scottish philosophers, and from humanitarianism, romanticism, and phrenology, to name only some of the more obvious

sources. From the depths of each doctor's individual personality came methods peculiarly applicable to one or more types of emotional disturbance.

Although we have not attempted to study the literature on the milder psychiatric diseases, we have found evidence that certain doctor-patient concepts were employed in this area before being applied in what we today would term psychoses. Since some of the techniques can be traced to the Greeks, one may ask what is novel, by 1840, in the doctor-patient relationship. The answer seems to lie in the trend towards increasingly complex but more explicit psychotherapeutic methods which are meaningful to the psychotherapy we practice today.

BIBLIOGRAPHY

1. Pinel, Philippe : A Treatise on Insanity. Sheffield : W. Todd, 1806.

2. Esquirol, Etienne : Des Passions. Paris : Didot Jeune, 1805.

3. McFadden, Robert Bruce, and Carlson, Eric T. : The Psychiatry of William Cullen. Unpublished manuscript.

4. Rush, Benjamin : Medical Inquiries and Observations upon the Diseases of the Mind. Philadelphia : Kimber & Richardson, 1812.

5. Pargeter, William : Observations on Maniacal Disorders. Reading : The Author, 1792.

6. Monro, John : Remarks on Dr. Battie's Treatise on Madness. London : John Clarke, 1758.

7. Daquin, Joseph : La Philosophie de la Folie. Chambéry : Gorrin, 1791.

8. Mora, George : Bull. Isaac Ray Med. Library, 2 : 50, 1954.

9. Cox, Joseph M. : Practical Observations on Insanity. Philadelphia : Thomas Dobson, 1811. 2nd London ed.

10. Trotter, Thomas : A View of the Nervous Temperament. London : Longman, Hurst, Rees & Orme, 1807. 2nd ed.

11. Haslam, John : Observations on Madness and Melancholy. London : J. Callow & G. Hayden, 1809. 2nd ed.

12. Harms, Ernest : Am. J. Psychotherapy, 13 : 269, 1959.

13. Burrows, George M. : Commentaries on the Causes, Forms, Symptoms, and Treatment, Moral and Medical, of Insanity. London : Thomas & George Underwood, 1828.

14. Ellis, W. C. : A Treatise on the Nature, Symptoms, Causes, and Treatment of Insanity. London : Samuel Holdsworth, 1838.

15. Ferriar, John : Medical Histories and Reflections. London : Cadell and Davies, 1795. Vol. II.

16. Dain, Norman, and Carlson, Eric T. : Milieu Therapy in the Nineteenth Century : Patient Care at the Friend's Asylum, Frankford, Pennsylvania, 1817-1861. J. Nerv. & Ment. Dis. In press.

17. Allen, M. : Essay on the Classification of the Insane. London : John Taylor, 1833.

18. Prichard, James Cowles : A Treatise on Insanity and Other Disorders Affecting the Mind. London : Sherwood, Gilbert & Piper, 1835.

19. Tuke, S. : Description of the Retreat. Philadelphia : Isaac Peirce, 1813.

20. Battie, William : A Treatise on Madness. London : J. Whiston & B. White, 1758.

21. Harper, Andrew : A Treatise on the Real Cause and Cure of Insanity. London : C. Stalker & J. Walter, 1789.

22. Georget, Etienne : De la Folie. Paris : Grevot, 1820.

23. Harms, Ernest : J. Ment. Sci., 103 : 804, 1957.

24. Mora, George : Bull. Hist. Med., 33 : 230, 1959.

25. Browne, W. A. F. : What Asylums Were, Are, and Ought to Be. Edinburgh : Adam & Charles Black, 1837.

26. Perfect, William : Select Cases in the Different Species of Insanity. Rochester : W. Gillman, 1787.

27. Bradford, Thomas L. : The Life and Letters of Dr. Samuel Hahnemann. Philadelphia : Beoricke & Tafel, 1895.

28. Combe, Andrew : Observations on Mental Derangement. Edinburgh : John Anderson, 1831.

29. Gall, Franz J. : Sur les Fonctions du Cerveau. Paris : J. B. Baillière, 1825. 6 vols.

30. Hallaran, William S. : Practical Observations on the Causes and Cure of Insanity. Cork : Edwards & Savage, 1818.

31. Conolly, John : An Inquiry Concerning the Indications of Insanity. London : John Taylor, 1830.

32. Carlson, Eric T. : Am. J. Psychiat., 115 : 535, 1958.

LATE RESULTS OF ORBITAL UNDERCUTTING

Report of 76 Patients Undergoing Quantitative Selective Lobotomies [1]

WILLIAM BEECHER SCOVILLE, M.D.[2]

Since 1948, when the writer first proposed cortical undercutting(1) as a method of interrupting cortical connections from various surface areas of the frontal and temporal lobes, he has performed the selective leukotomy operation of "orbital undercutting" of the frontal lobes on 94 private patients and 41 state institutional patients in Connecticut. They constitute two distinct categories of patients both in the malignancy of their mental illness and in their cultural backgrounds. Previous reports have been made on the early results in various diagnostic categories, ranging from benign psychoneuroses to malignant schizophrenic psychoses(2, 3, 4, 5). Observations have been published on certain physiologic changes resulting from stimulation and destruction of anatomic areas within the frontal and temporal lobes(6, 7). Presentation is now made of the late results of orbital undercutting, an operation which has largely replaced other selective operations in the author's hands.

HISTORICAL

Trends and cycles in psychiatric treatment, as in clothes, change inexplicably. In the latter half of this century, the organic Kraepelin school has successively been followed by psychoanalysis, shock therapy, lobotomy, and, more recently, by newer drugs and chemotherapies. The results in each have been encouraging but the public's acceptance has waxed and waned in a manner quite lacking in objectivity. Probably the greatest benefit of the surgical, electrical and chemical therapies has been a luring of psychiatrists back to the organic medical fold from those Freudian fields of mystic environmentalists. Although at present in both America and Britain, psychosurgery is in temporary eclipse to ever newer trends in drug therapies and certain shock therapies, the writer believes that psychosurgery continues to have a very definite place in the treatment of mental disease.

Drug therapy has definite limitations in the more intractable emotional and psychotic disturbances. Shock treatment is largely limited to use in depressive diseases; it fails to prevent recurrences in these depressions; it may increase anxiety, tension and somatic symptoms in the chronic neuroses; and it is unsafe in the elderly age group. Emphasis is made on the permanent sequelae of insidious mental blunting and measurable memory loss resulting from repeated courses of shock treatment, exactly similar to those changes seen in the recurrent brain injuries of prize fighters and other accident prone individuals. All too frequently these late effects are blamed on the natural course of the patient's disease.

Complete lobotomy has been largely replaced by limited selective operations, especially in the benign psychoneuroses and depressions and in those schizophrenic patients possessing higher cultural backgrounds(8-14). The classical standard lobotomy or leukotomy is now advocated only in deteriorated schizophrenic patients of low cultural level requiring continuous restraint and nursing care. Even in such cases selective undercutting of the superior convexity of the frontal lobes gives a comparable benefit with less personality blunting(1). However, the principal application of selective lobotomies is in the neuroses, depressions and certain senile states. Such selective lobotomies, especially orbital undercutting, are now advised by the author as the treatment of choice in those recurrent depressions requiring more than a limited course of shock treatment; in seriously disabling anxiety-tension states; in intractable obsessive-compulsive syndromes without excessive narcissism and egocentricity; and in certain anxious, agi-

[1] Presented before the Royal Society of Medicine, London, England, Feb. 9, 1960.

[2] 85 Jefferson St., Suite 401, Hartford 14, Conn.

tated elderly people; this latter group giving unexpectedly gratifying results.

OTHER OPERATIONS

The chief criterion for the type and location of the newer selective operations should be a maximum of improvement with a minimum of personality deficit, using a technique which can be exactly duplicated from patient to patient. Bilateral medial quadrantic sectioning or electrocoagulation(14, 8) satisfies the first criterion very well, but precise duplication is difficult because of a blind sectioning of internal white matter containing concentrated bundles of fibres, using electric or chemical agents without measurable control over the spread of destruction. The transorbital lobotomy of Fiamberti(15) and later Freeman(16), in spite of its extreme simplicity, is undesirable in the more benign illnesses because of its complete lack of precision. When done, it should be performed by surgeons and not psychiatrists. Bilateral fractional ablations of the medial temporal lobe(5) have not shown sufficient benefit to warrant their use in mental illness and may cause memory loss(17). Certain psychosurgeons have stressed the role of the rostral cingulate area and its effect on obsessive-compulsive thinking. Cairns(18) and more recently Lewin(19), LeBeau(9), Livingston(20) and Ward(21) have done modified undercutting or resections of this area. The writer, in more extensive interruptions of the rostral cingulate cortex, failed to note an appreciable specificity(1). In the more malignant psychoses occurring in well preserved personalities, the writer has advocated undercutting of the superior convexity(1), an operation duplicated in later years by McKissock(10) with his rostral leukotomy and Pool(22) with his bimedial prefrontal lobotomy.

However, to an increasing degree, the writer has limited his psychosurgery to the operation of orbital undercutting because of its simplicity; the absence of personality blunting; the preservation of adjacent and deep blood supply, and most particularly because of the ability to duplicate in successive patients, under direct vision, a quantitative sectioning of connections from measured surface areas. It is gratifying to know that distinguished surgeons of the British school, especially Northfield(23), Lewin(12), and Knight(24), and of the Scandinavian school, Busch(2) and Sjoqvist(2), have reached similar conclusions in their advocacy of this procedure, called in England orbital leukotomy, in Sweden orbital undercutting, and in Denmark orbito-medial leukotomy.

CASE SELECTION

The writer, in preparing for this address before the Royal Society of Medicine some 10 years after his initial presentation on "Cortical Undercutting" has elected to review the late results of those cases limited to orbital undercutting and omitting mental defectives. Out of 92 private patients, 42 have been followed for more than 4 years (an arbitrary minimum in order to permit studies on approximately 50 patients), a maximum of 11 years and an average of 6.2 years. Of this "late follow-up" series, 12 had malignant schizophrenic types of psychoses, 30 had benign; and from this latter group all patients over 65 years of age were additionally studied in a separate category. Specifically, they fall within the categories of schizophrenia (5 cases), pseudoneurotic schizophrenia (7 cases), depressions (14 cases), neuroses (16 cases), and "elderly" (14 cases). The majority of these patients were operated upon on the private neurosurgical service of the Hartford Hospital and discharged to their homes. They represent patients of some private means from appreciably high cultural backgrounds. The writer has elected to separate this group from that of 34 cases of schizophrenic patients followed over a 10-year period in 2 state mental institutions. It was expected that the late results would be poor in this latter category, as they were derived from patients of poor economic and cultural background, often seriously deteriorated, and without facilities for care or rehabilitation outside of institutions. Follow-up reports have been obtained from members of the immediate family or supervising physician following direct telephone communication, printed questionnaires, and personal examination in the majority of private patients. Much difficulty was encountered because of a scattering of such

patients following operations to the far corners of the United States.

In age and sex groups, the institutional and private categories were roughly comparable, the schizophrenic and pseudoneurotic schizophrenic patients being relatively young with an average of 34 years and three-fifths undergoing operation under the age of 40. The psychoneurotic patients were in the middle age group with an average of 54 years and two-thirds above the age of 40. The depressed patients were older, averaging 64 years, all of them being operated upon over the age of 40, and the "elderly" group averaged 72 years, no case being younger than 65, the majority in their 70's and three in their 80's. Complications and physiologic observations were recorded on a total series of 128 cases undergoing orbital undercutting.

RESULTS

Psychiatric—(See Tables 1 and 2). The results are tabulated under the headings of 1. "Marked benefit," constituting a clinical cure or marked improvement, permitting the patient to live at home and return to his former occupation ; and 2. "Significant benefit," constituting moderate improvement, marked improvement or clinical cure, as described by relatives and supervising doctors (described in more detail in an earlier publication(2). Two other headings have been added in Table 1 to indicate a progression or regression in improvement over the years of study. "Early" follow-up studies were made between the 3rd and 12th months postoperatively.

The "late" results (Table 1) in the private group of patients revealed a satisfactory and significant improvement in all diagnostic categories with certain unexpected variations. The best late results occurred, to our surprise, in the schizophrenic group. All 5, or 100%, showed a marked benefit as compared to 20% with early benefit. This was confirmed to a less dramatic degree in the state hospital cases. The depressions and "elderly" states closely approximated this excellent result, showing 93% and 86% respectively having marked improvement as compared to 64% and 50% in the early results. The psychoneuroses and pseudoneurotic schizophrenic groups had an appreciably lower percentage of marked improvement, being 63% and 57%, respectively, but again increased considerably over the early results. In fact, the pseudoneurotic schizophrenics showed the same degree of dramatic increase in late benefits as did the schizophrenic categories. If one is less demanding in one's evaluation, using moderate or "significant" benefit rather than a marked benefit in classification, all 5 categories are in reasonable approximation to each other, ranging from 71% to 93%. Here again the psychoneuroses proved more intractable than schizophrenics.

Although the number studied in each category of private patients is admittedly too low for great statistical significance, the *continuing* improvement of all patients over our 4 to 11 year studies and the especial and unexpected late benefits in all 46 schizophrenic patients is deemed statistically significant. The writer anticipated regression in some one-half of all cases, especially in the schizophrenic patients. This proved not to be the case, total late "marked" benefits being nearly double that of the early (76% as opposed to 40%). The schizophrenic patients lead in late improvement, increasing from 20% to 100%. The depressions and all "elderly" states were a close second, and it is gratifying to observe the absence of a single appreciable relapse in the depressive patients over a 4 to 10 year follow-up. Obsessive-compulsive psychoneuroses and schizophrenic patients with predominantly neurotic overlays proved the most intractable. In studying the diagnostic categories in relation to an advance or a regression from the original improvement, all showed a preponderance of the patients advancing. Relapses to a significant degree occurred only in the obsessive-compulsive symptomatology.

In studying the 34 cases of schizophrenic patients of the lower economic and cultural scale committed to two state institutions, a similar unexpected late improvement occurred. In fact, in one of the two institutions the late results showed 6 times as many patients exhibiting marked improvement. Orbital undercutting, when performed on schizophrenic patients within state hospitals, resulted in "significant" late benefit

TABLE 1

PRIVATE PATIENTS
RESULTS

Diagnostic Category	*No. of late follow-ups (average—6.2 years)*	*Average age (in years)*	*MARKED BENEFIT OR CLINICAL CURE*		*"SIGNIFICANT" BENEFIT ***		*Advance from original improvement*	*Regression from original improvement*
			Early	*Late*	*Early*	*Late*		
Schizophrenia (9 patients)	5	34	1 (20%)	5 (100%)	3 (60%)	5 (100%)	5 (100%)	0 (0%)
Pseudoneurotic schizophrenia (11 patients)	7	34	1 (14%)	4 (57%)	4 (57%)	5 (71%)	4 (57%)	1 (14%)
Psychoneuroses (37 patients)	16	54	6 (38%)	10 (63%)	16 (100%)	12 (75%)	8 (50%)	6 (38%)
Depressions (35 patients)	14	64	9 (64%)	13 (93%)	13 (93%)	13 (93%)	6 (43%)	1 (7%)
Total patients 92	42	47	17 (40%)	32 (76%)	36 (86%)	35 (83%)	23 (55%)	8 (19%)
*Elderly** (29 patients)	14	72	7 (50%)	12 (86%)	13 (93%)	12 (86%)	7 (50%)	2 (14%)

*Note: Omitted from the total inasmuch as they are duplicated under Psychoneuroses and Depressions.
**Note: "Significant" benefit represents all patients showing moderate or marked benefit or clinical cure.

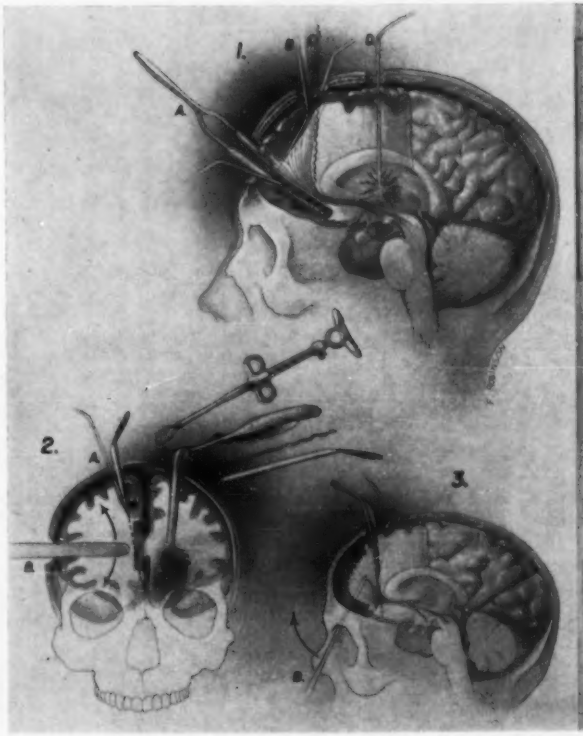


FIGURE 1

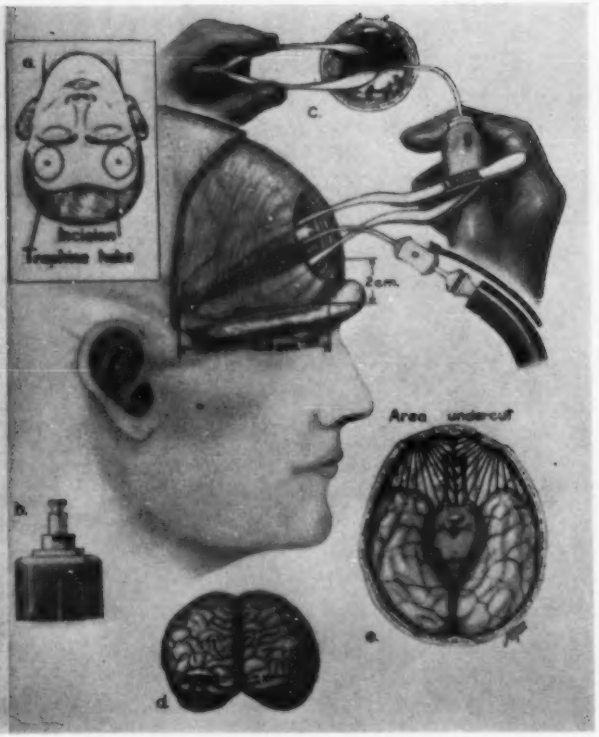


FIGURE 2

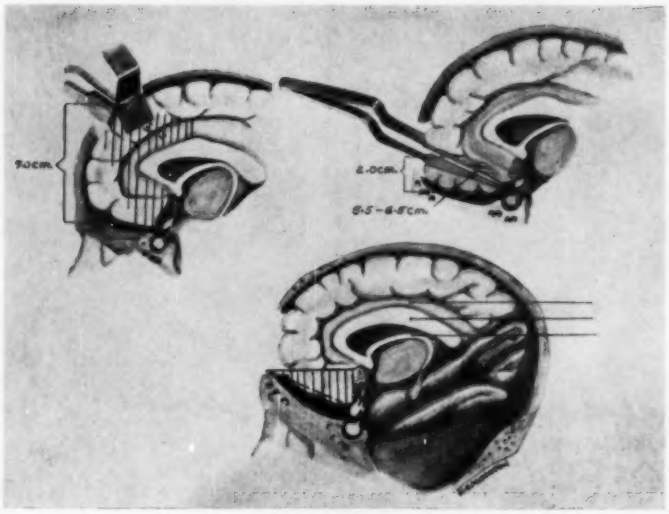


FIGURE 3

ILLUSTRATIONS

Figure 1. Various forms of selective lobotomies.

1. A. Scoville's orbital undercutting. B. Scoville's undercutting of superior convexity. C. Grantham's electrocoagulation of inferior medial quadrant. D. Spiegel and Wycis' stereotaxic electrocoagulation of thalamic nucleus.

2. A. Scoville's cingulate gyrus undercutting. Livingston's cingulate gyrus subcortical sectioning. B. Freeman and Watts' "closed" standard lobotomy. C. Medial inferior quadrant section by McKenzie's leucotome method, Schwartz' nasal speculum method, Grantham's electrocautery method, and Poppen's direct vision suction and spatula method.

3. A. Lyerly and Poppen's "open" standard lobotomy under direct vision. B. Fiamberti and Freeman's transorbital lobotomy. Arrows indicate deep frontal cut. Line hatching indicates Pool's original topectomy of 9 and 10. Dotted hatching indicates his present topectomy of the superior and inferior tips of the frontal lobes.

Figure 2. Illustration of orbital undercutting.

Figure 3.

Left upper illustration : Vertical lines illustrate area of cortex and cingulate gyrus undercut in the operation of rostral cingulate gyrus undercutting.

Right upper illustration : Illustrates standard orbital undercutting operation.

Lower illustration : Illustrates wrong undercutting extended superiorly into septal area, resulting in loss of consciousness, seizures and later bizarre confusional state. Horizontal lines illustrate cingulate gyrus, corpus callosum and fornix, respectively.

TABLE 2

STATE HOSPITAL CASES, 10 YEAR FOLLOW-UP ON SCHIZOPHRENIC PATIENTS

	Cases	Average Age	Marked Improvement		"Significant" Improvement (moderate and marked)	
			Early	Late	Early	Late
Conn. State Hospital	18	34	6 (33%)	11 (61%)	13 (72%)	15 (83%)
Norwich State Hospital	16	43	1 (6%)	6 (38%)	6 (38%)	11 (69%)
Total	34	39	7 (21%)	17 (50%)	19 (56%)	26 (76%)

in 76% and "marked" late benefit in 50% of patients. This compares very favorably with the results of other more radical lobotomy operations.

In summation, in the study of 42 private patients followed from 4 to 11 years, with a separate study of 14 "elderly" patients found in the depressed and psychoneurotic groups, the late results were superior in the categories of schizophrenia, depression and the "elderly," averaging 100%, 93% and 86%, respectively; while the psychoneuroses and pseudoneurotic schizophrenics showed 63% and 57%, respectively; or an overall average of 76% with "marked" benefit and 86% with "significant" benefit. Although showing much less overall benefit, patients in the lower economic and cultural range showed an equal amount of late over early improvement.

A warning should be given as to the necessity of using a very conservative degree of undercutting in the older age groups, in order to prevent personality deterioration(3, 7). When conservatively performed, these elderly patients appeared in better contact with their environment, with a restoration of sleep rhythm, cheerfulness and social outgoingness not previously present; indicating that their preoperative psychopathology was not due to simple aging. It should also be pointed out that psychoneurotic patients suffering from anxiety, tension and real emotional suffering do much better, both early and late, than those with rigid personalities exhibiting much narcissism, egocentricity, and maschochistic enjoyment of their ritual patterns. In these latter patients, orbital undercutting brings out their underlying selfishness to a distressing degree.

PHYSIOLOGIC RESULTS AND COMPLICATIONS

A review of the late results of orbital undercutting showed little changes from those described in earlier papers(1). Actually, all complications occurred in the early stages. In recapitulating them, it should be stressed that the majority occurred in elderly persons. There were two deaths in 93 persons, one from cardiac failure on the first postop day in a patient 76 and one on the second postop day following a convulsion in a patient of 66 years of age. One 83-year-old patient showed a marked one-day improvement followed by a sudden confusional and stuporous state thought to be due to thrombosis. Two elderly patients fell out of bed, one suffering a fractured hip and the other an intracerebral clot requiring secondary evacuation and lobectomy with deterioration thereafter. These unfortunate occurrences have resulted in our placing all elderly postoperative lobotomy patients in a net cage (25) fastened over the bed for the first 24 to 48 hours, unless special nursing care is available.

When pseudoneurotic schizophrenic patients undergo selective lobotomies, relatives and physicians must be warned in advance of the possibility of bringing to the surface underlying schizophrenic symptoms. Such patients apparently cloak their psychotic delusions in an obsessive-compulsive or somatic conversion overlay. Provided

there is advance warning, lobotomy appears justified, inasmuch as it enables the patient to ventilate his underlying delusions and make better contact with society. In only one case was a later commitment found necessary, and that only after a 10-years' interlude.

There were no infections. There were three blood clots requiring open drainage, one following a fall from bed. Urinary incontinence and temporary confusional state has been largely absent, in comparison with certain other lobotomy patients.

Convulsions: In attempting a 10-year follow-up in the state hospital cases, great difficulty was encountered in obtaining an honest tabulation of isolated convulsions, largely because of neglect of anti-convulsant medication in deteriorated patients and proper recording by ever changing personnel. However, in this series, 29% of 42 had one or more eventual seizures. In a series of 121 private patients, of which 52 were followed an average of 6.2 years, there have been 7 (5.7%) known patients who developed isolated seizures more than one week postoperatively. Only one of these patients had more than one seizure, indicating easy controllability by dilantin; and only one patient had seizures more than 4 years postoperatively, the others occurring in the first, second or third postoperative years. An additional 6 patients had seizures within the first day after operation without later recurrences, attributed to a too radical extension of the undercutting upwards and posteriorly into the septal area, a known epileptogenic area(7).

The physiologic effects of orbital undercutting have been described in previous papers. Of both scientific and therapeutic importance has been the observation that the uncal area as well as the septal area is sharply epileptogenic. Damage to the septal area may affect adversely states of consciousness and/or confusional states, such occurring in 5 out of 121 patients undergoing orbital undercutting(7). Hence, caution is urged against too radical posterior or *superior* extension of the orbital undercutting, especially in elderly persons. The line of cleavage must lie exactly at the junction of grey and white matter as one approaches the optic chiasm.

DISCUSSION AND CONCLUSIONS

In reviewing late with early results of orbital undercutting, the writer is of the impression that selective lobotomies, especially when utilizing the precise method of cortical undercutting, continue as procedures of great merit in the treatment of both benign and malignant mental disease. The newer drugs and electric shock cannot yet replace them in the treatment of the more intractable neuroses, recurrent depressions, senile agitated states and certain schizophrenic patients of high cultural background. They offer the advantage of greater intensity than drug therapy, and of fewer relapses than offered by shock therapy. As demonstrated in earlier studies, the results in depressions have been little short of dramatic; the results in certain intractable obsessive-compulsive neuroses and in anxiety-tension states, especially in the aged are more than satisfactory; and similarly drug addiction and alcoholism when due to panic, anxiety or social discomfort are markedly benefited. Caution must be given against using this operation for persons having constitutional psychopathic personalities especially those showing criminal or alcoholic tendencies, as well as for persons showing those obsessive-compulsive traits overlying extremely narcissistic and egocentric personalities. Epileptic seizures appear to occur in the early postoperative years and can be easily controlled by dilantin therapy when occurring in cooperative persons not already deteriorated.

Unexpected results of a progressive and ultimately superior benefit followed orbital undercutting in schizophrenic patients derived from high cultural backgrounds. Neither depressive nor elderly patients have shown appreciable relapses in long-term studies. The psychoneurotic patients of the obsessive-compulsive type have proved more intractable, with more variability and more relapses. The category of pseudoneurotic schizophrenia in younger age groups is not uncommon, and underlying malignant schizoid symptoms are obscured by a superficial constellation of both obsessive and compulsive symptomatology. The neurotic overlay can be removed by

orbital undercutting bringing to the surface deeper psychopathology.

In a study of the psychopathology following section, stimulation or resection of various areas of the frontal and medial temporal lobes, the writer must conclude that interruption of surface areas only indirectly affect the fundamental mechanisms of mental disease and, with the exception of depressions, the benefit by selective leukotomy lies more in a blunting of higher sensitivities than in a changing of disease patterns. In the future, it is hoped that stereotaxic, ultrasonic or chemical approaches may be found to the deeper midline, diencephalic, limbic and reticular systems. Unfortunately, to date lesions made in such areas produce rather than alleviate psychotic delusional and affective aberrations.

Summary

1. Psychosurgery continues to have definite applications, especially in the involutional and cyclic depressions, the agitated states of the elderly, the better preserved schizophrenics, and the intractable psychoneuroses, especially when suffering from anxiety or tension.

2. It is preferred to shock treatment in those depressions requiring more than short courses of shock treatment because of less emotional blunting, memory loss and relapses.

3. Agitated depressed senile states react more favorably to limited lobotomy operations than those in the younger age group.

4. Complete lobotomy has been replaced by limited selective operations. Undercutting of the orbital cortex offers the advantage of a precise technique under direct vision in an area causing appreciable lift in mood, lessening of anxiety and a minimum personality blunting.

5. The late results in orbital undercutting when studied in the separate categories of depressions, agitated senile states, schizophrenia, pseudoneurotic schizophrenia and intractable psychoneurosis have in most cases continued to show an improvement rather than regression or relapse. It has done so to a far greater degree than was anticipated, especially in schizophrenic patients of high cultural background.

6. Complications, including seizure formation, occur in the early rather than the late follow-up studies.

BIBLIOGRAPHY

1. Scoville, W. B. : J. Neurosurgery, **6** : 65, 1949 and Suppl., Proc. Roy. Soc. Med., Sect. Psych., 1st Session, p. 3, Sept. 1949.

2. Scoville, W. B., Wilk, E. K., and Pepe, A. J. : Am. J. Psych., **107** : 730, Apr. 1951.

3. Scoville, W. B. : Dis. Nerv. Sys., **15** : 2, Nov. 1954.

4. Scoville, W. B., and Ryan, V. G. : Geriatrics, **10** : 311, July 1955.

5. Scoville, W. B., Dunsmore, R. H., Liberson, W. T., Henry, C. E., and Pepe, A. : Observations on medial temporal lobotomy and uncotomy in the treatment of psychotic states. Proc. ARNMD, Psychiat. Treatment, Vol. 31. Baltimore : Williams & Wilkins Co., 1953.

6. Liberson, W. T., Scoville, W. B., and Dunsmore, R. H. : EEG and Clin. Neurophysiol. J., **3** : 1, Feb. 1951.

7. Scoville, W. B. : Observations on consciousness and seizure formation following stimulation of septal and uncal areas in man. Proc. 1st Internat. Cong. Neurological Sciences, Brussels, 1957, Vol. 5, Jt. Proc. and Round Table Conf. London, N. Y., & Paris : Pergamon Press, 1959.

8. Grantham, E. G. : J. Neurosurg., **8** : 405, 1951.

9. LeBeau, J. : Psycho-Chirurgie et Fonctions Mentales. Masson et cie Editeurs, Paris, 1954.

10. McKissock, W. : Lancet, **2** : 91, 1951.

11. Sargant, W. : British J. Med., **2** : 213, 1953.

12. Tow, and Lewin : Lancet, Sept. 1953.

13. Elithorn, A. : J. Indian Med. Prof., Dec. 1956.

14. Paul, N. L., Fitzgerald, E., and Greenblatt, M. : J.A.M.A., **161** : 815, 1956.

15. Fiamberti, A. M. : Rass. Studi Psichiat., **26** : 797, 1937.

16. Freeman, W. : Proc. R. Soc. Med., **42** : Suppl. 8, 1949.

17. Scoville, W. B., and Milner, B. : J. Neurol., Neurosurg. and Psychiat., **20** : 11, 1957.

18. Whitty, C. W. M. : Proc. R. Soc. Med., **48** : 453, 1955.

19. Lewin, M. : See discussion.

20. Livingston, R. B. : Subcortical isolation of area 24. Paper read before Harvey Cushing Soc., Hollywood, Florida, April 1951.

21. Ward, A. A., Jr. : J. Neurophysiol., **11** : 13, 1948 ; also ARNMD Proc., **27** : 438, 1948.

22. Pool, L. : New modified lobotomy called bimedial prefrontal lobotomy (cortical undercutting of superior convexity) described by

Slocum and Bennett. South. Divis. APA, Jan. 1959, and Slocum, Bennett and Pool : Brain surgery for intractable anxiety. Modern Med. J., Jan. 1960.

23. Northfield, D. W. C., and Strom-Olsen, R. : Lancet, 1 : 986, May 1955.

24. Knight, G. C., and Tredgold, R. F. : Lancet, 1 : 981, May 1955.

25. Chant, F. K., Jr., and Shortliffe, E. : Hospitals, JAHA, 32 : 42, May 1958.

COMPARATIVE CLINICAL EXPERIENCE WITH FIVE ANTIDEPRESSANTS

JOHN P. HOLT, M.D., ELEANORE R. WRIGHT, M.D., AND ARTHUR O. HECKER, M.D.[1]

Clinical and non-clinical reports, too numerous to list, have appeared describing the actions and uses of the newer antidepressants. In general, these reports agree that the drugs are effective; many also indicate that they are superior to the amphetamines and tranquilizers in specific types of depression. In view of these reports, we decided to undertake a study of 5 of these new drugs to compare their effectiveness in hospitalized, depressed patients. The drugs chosen were: isocarboxazid (Marplan); nialamide (Niamid); phenelzine (Nardil); pheniprazine (Catron), (all monoamine oxidase (MAO) inhibitors); and imipramine (Tofranil)-(a non-monoamine oxidase inhibitor).[2]

Since it is generally recognized that precise diagnostic classification of depressed patients is difficult, we decided to select patients in accordance with Lehmann's(1) definition of the depressive syndrome which is based on the following triad of primary symptoms: a sad, despairing mood; a decrease in mental productivity; and a reduction of drive and retardation (or agitation) of expressive motor responses. In addition to these primary symptoms, attention was also given to various secondary symptoms (see Table 1). Moreover, because some investigators(2, 3) believe that clinical response to antidepressant therapy occurs through the control of symptoms resulting from induced biochemical alterations rather than from true reversibility of the basic cause of the depressive disorder, we decided to use the patients' pre- and post-treatment symptoms as a direct measure of the drugs' activity.

In all, 134 patients were selected, but only 100 (20 patients on each of the 5 drugs) completed the evaluation; 28 were dropped because they received concomitant treatment with either a tranquilizer or ECT; 4 because they refused to take medication; and 2 died from organic causes unrelated to drug therapy. Diagnostically, the patients represented a relatively heterogeneous group (Table 2), but all possessed sufficient primary and secondary symptoms to indicate a well-established depressive syndrome. Of these patients, 62 were women and 38 were men; 80% of them were between the ages of 25 and 35 (range of ages: 18 to 72 years).

TABLE 1

SYMPTOMATIC CHECK LIST

Psychic Symptoms
- Despondent Mood
- Psychomotor Inhibition
- Lack of Interest-Initiative
- Pessimism, Hopelessness
- Self-Reproach
- Delusions of guilt-unworthiness
- Suicidal thoughts
- Tendency to remission in eve
- Anxiety
- Agitation
- Poor insight into condition
- Obsessive compulsive features

Somatic Symptoms
- Insomnia
- Anorexia
- Fatigue
- Weakness
- Constipation
- Gaseous distention
- Abdominal Pain
- Urinary Frequency
- Headache
- Shortness of breath
- Palpitation
- Tachycardia
- Parathesia
- Anal Pruritis
- Vaginal Pruritis

METHOD AND MATERIAL

Prior to receiving any of the drugs, all the patients underwent a complete physical examination; laboratory tests, including a CBC, urinalysis, alkaline phosphatase,

[1] Embreeville State Hospital, Embreeville, Pa.

[2] We are grateful to the various pharmaceutical companies for supplying generous supplies of their individual products.

TABLE 2

DIAGNOSTIC CATEGORIES

	No. of Patients
Depressive Reactions	
Psychotic	6
Neurotic	14
Manic-Depressive-Depressed Type	15
Involutional Psychotic	15
Schizophrenic Reactions	
Paranoid	15
Catatonic	6
Acute Undifferentiated	3
Chronic "	4
Other	2
Organic Brain Disorders	
Chronic Brain Syndrome associated with Cerebral Arteriosclerosis	4
Chronic Brain Syndrome associated with Circulatory Disturbance	2
Chronic Brain Syndrome associated with Central Nervous System Syphilis	4
Chronic Brain Syndrome associated with Convulsive Disorder	4
Chronic Brain Syndrome associated with Intoxication	1
Acute Brain Syndrome associated with Alcohol Intoxication	5
TOTAL	100

cephalin flocculation, serum bilirubin, and urine urobilinogen, were done on all patients. In addition, each patient was interviewed to determine his current mental status, and to allow completion of the symptomatic check list (Table 1). Patients were assigned to one of the drugs in rotation until equal numbers of patients from each of the broad diagnostic categories had been placed on each of the drugs.

All medications were administered orally in accordance with the dosage schedules shown in Table 3. Initial doses were given for two weeks and, if no significant symptomatic improvement was noted, were gradually increased by unit-dose increments at intervals varying from 2 to 6 days until the maximum dose was reached. Maximum doses were given for 2 to 4 weeks, at which time the dose was decreased to a level (maintenance dose) which produced continuous symptomatic improvement. When the maintenance dose was given for 3 or 4 weeks without producing additional improvement, the dose was reduced to a level (minimum dose) which kept the patient from relapsing. The minimum dose was then continued for at least 2 weeks, after which time the patient was evaluated to determine the degree of improvement that had occurred. Blood pressure measurements were made daily during the first week of drug therapy, and twice weekly thereafter. Each patient's response to treatment was recorded: 1. Daily, in the progress notes of the ward physicians; 2. Weekly, in interviews with the senior investigator, and in the reports of the nursing staff; 3. Periodically, in reports of the occupational and industrial therapists.

After 16 weeks of treatment, each patient's clinical progress was determined by reviewing the various aforementioned reports. A final interview was conducted to complete a second check list of the

TABLE 3

DOSAGE SCHEDULES

DRUG	Unit Oral dose (mg.)	Dose Frequency	Daily Doses (mg.)			
			Initial	Maximum	Maintenance	Minimum
ISOCARBOXAZID (Marplan)	10	TID	30	60	30	10
NIALAMIDE (Niamid)	25	TID	75	150	75	25
PHENELZINE (Nardil)	15	TID	30	90	45	15
PHENIPRAZINE (Catron)	3	BID	6	12	6	6
IMIPRAMINE (Tofranil)	25	TID	75	200	75	25

depressive and somatic symptoms still present. Patients who were discharged from the hospital prior to the 16th week of treatment received a final evaluation several days before being discharged. Results of treatment were judged as follows :

Maximum Improvement—remission of all symptoms. Patients in this category were either discharged or were considered eligible for discharge.

Marked Improvement—remission of all primary depressive symptoms and considerable relief of secondary symptoms.

Moderate Improvement—partial remission of all or complete remission of at least one-half of the presenting symptoms.

Minimal Improvement—little or no change in the primary depressive symptoms, but a slight to considerable remission of at least one-half of the secondary symptoms.

No Improvement—no change in symptoms, or severe aggravation of the basic psychoses.

Significant levels of improvement included the ratings of maximum, marked, and moderate improvement.

CLINICAL, SYMPTOMATIC AND LABORATORY RESULTS

The patients' clinical response to the various antidepressants, as derived from the daily, weekly and interval reports of the various staffs at the hospital, is shown in Table 4. Because of the small number of patients in each rating category, the results have been "pooled" and are shown as the number obtaining "Significant Improvement." An inspection of the number of patients in each of the 5 improvement categories indicates that phenelzine produced the largest number of maximum and marked improvements (5 and 7, respectively), while nialamide produced the fewest (1 and 3, respectively) ; the response to the other drugs was between these extremes. The largest number of failures were observed in patients receiving pheniprazine (5) and nialamide (4).

Results based on the patients' symptomatic improvement are shown in Table 5. With one exception, a review of the effect on individual psychic and somatic symptoms failed to show any really significant differences between the drugs. The exception indicated that imipramine and phenelzine, particularly the latter, afford greater relief of anxiety and agitation than the other drugs. From an overall point of view, phenelzine and imipramine had the greatest effect on relieving psychic symptoms (78.6% and 75.6%, respectively) and somatic symptoms (78.8% and 81.2%, respectively).

Despite the similarity of depressive symptomatology of all the patients, it would appear that individual improvement depended, to some extent, on whether the patient had a primary depressive reaction or depressive symptomatology associated with another psychotic reaction. For example, of the 50 patients of the former type, 39 (78%) obtained significant improvement ; 18 (36%) of them were discharged or eligible for discharge. Of the 30 patients with

TABLE 4

CLINICAL RESPONSE TO TREATMENT WITH ANTIDEPRESSANTS

	ENDOGENOUS DEPRESSIONS		*SCHIZOPHRENIC REACTIONS*		*ORGANIC BRAIN DISORDERS*		
DRUG	*Number Treated*	*Number Signif. Improvmnt.*	*Number Treated*	*Number Signif. Improvmnt.*	*Number Treated*	*Number Signif. Improvmnt.*	*OVERALL % SIGNIF. IMPROV.*
ISOCARBOXAZID	10	8	6	2	4	1	55
NIALAMIDE	10	5	6	2	4	1	40
PHENELZINE	11	11	5	3	4	2	80
PHENIPRAZINE	8	6	8	4	4	2	60
IMIPRAZINE	11	9	5	3	4	2	70
TOTAL & AVERAGE	50	39	30	14	20	8	61%
PER CENT (%)	78		47		40		

underlying schizophrenic reactions, 14 (47%) obtained significant improvement; none was discharged or became eligible for discharge. Of the 20 patients with underlying organic brain disorders, 8 (40%) obtained significant improvement. All 5 of the patients whose disorder was associated with alcohol intoxication obtained this level of improvement; one of these patients was discharged.

Within the 3 diagnostic groups, response to treatment was quite similar, regardless of the drug being used. In the group with primary depressive reactions, patients with rather severe retardation and inhibition of expressive motor responses seemed to experience the most definitive remission of symptoms. This was particularly true of patients with involutional psychotic reactions (without severe agitation) and manic-depressive, depressed reactions. Response in patients in whom anxiety and agitation were major symptoms was inconsistent. The response of patients with hyperactive tendencies was often preceded by increased restlessness and other manifestations of the neurosis or psychosis. Patients in the group with primary depressive reactions generally exhibited initial symptomatic improvement at the end of 2 weeks, and optimal improvement between 4 and 6 weeks. As would be expected, there were exceptions to this generalization in both directions. Some of the patients, particularly those with involutional or manic-depressive, depressed reactions, responded sooner than two weeks. Regardless of the diagnosis, patients with histories of recurrent depressive episodes and who had become increasingly resistant to previous treatment with either ECT or phenothiazines, responded to treatment more slowly, and it was not uncommon for them to remain unimproved until they had been on a drug for 4 to 6 weeks. Initial improvement, however, was of the same character as that noted in the more responsive patients; optimal improvement in these patients usually occurred between the sixth and eighth week of treatment.

The degree of improvement in the group of patients with underlying schizophrenic reactions was not, as previously mentioned, as great as that in the group with primary depressive reactions. Although patients in the schizophrenic group with catatonic reactions seemed to derive the most benefit from treatment, their response was still somewhat unpredictable. For example, all of these patients experienced some improvement, but half of them demonstrated agitation, hostility and mild accentuation of schizophrenic symptomatology as the depressive symptoms were relieved. Patients with paranoid or undifferentiated types of schizophrenia exhibited some improvement in mood, less apathy and somatic symptomatology, usually without accentuation of their underlying disorder. For this entire group, 3 to 6 weeks of treatment were required before any signs of improvement were noted; optimum improvement generally occurred within 6 to 9 weeks. As stated earlier, these patients required maximum doses of the drugs and it was usually on these doses that optimum improvement was noted. If activation or accentuation of the

TABLE 5

SYMPTOMATIC IMPROVEMENT

DRUG	*Average # of Subj. Symptoms/ Patient*		*Average % Improvement*	*Average # of Somatic Symptoms/ Patient*		*Average % Improvement*	*% Total Improvement*
	Before Therapy	*After Therapy*		*Before Therapy*	*After Therapy*		
ISOCARBOXAZID	6.2	1.8	71.0	3.3	1.15	65.1	68.9
NIALAMIDE	4.75	2.25	52.6	2.25	.95	57.8	54.3
PHENELZINE	5.6	1.2	78.6	2.6	.55	78.8	78.7
PHENIPRAZINE	4.25	1.4	67.0	2.4	.90	62.5	65.4
IMIPRAMINE	5.95	1.45	75.6	3.2	.60	81.2	77.6

underlying disorder were to occur, it too occurred on the maximum dose and prompt reduction in dosage was mandatory.

As might be expected, response to treatment was poorest in the group of patients with organic brain disorders. Improvement was limited almost entirely to those who had an acute disorder associated with alcohol intoxication; initial improvement in these patients was seen during the first week of treatment. Initial improvement in the remaining patients with organic disorders was difficult to determine. It seemed to occur somewhere around the third or fourth week of treatment, but never became pronounced enough to affect the patients' general activity. These patients appeared to become a little more active and less hostile, but as this occurred they also tended to become confused, agitated, anorectic and have memory disturbances. In all probability, the concentrated attention the patients received while the study was being conducted contributed to their limited improvement as much as therapy.

Additional efforts to delineate factors which might have contributed to therapeutic success or failure of the drugs were inconclusive. A slightly higher percentage of women responded than men, but the margin of difference was too small to be meaningful. Age did not appear to be a significant factor. Excluding the elderly patients with concomitant organic brain disorders, older patients seemed to respond as well as younger ones. However, we discovered early in the study that elderly, chronically depressed patients could not tolerate the same doses of the drugs as younger patients. Concurrent chronic physical diseases had little or no effect on any of the drugs' activity, as evidenced by the relatively large number of patients with cardiovascular disease, arthritis, and diabetes who achieved significant levels of improvement.

SIDE EFFECTS

The drugs produced side effects (Table 6), most of which seemed related to changes in the autonomic and peripheral nervous system. As will be noted from the table, phenelzine and pheniprazine pro-

TABLE 6

INCIDENCE OF SIDE EFFECTS

	ANTIDEPRESSANT				
SIDE EFFECT	*Isocarboxazid*	*Imipramine*	*Nialamide*	*Phenelzine*	*Pheniprazine*
Dryness of Mouth	16	9	7	2	1
Constipation	6	5	4	1	3
Nausea	3	4	2	0	0
Vomiting	1	0	0	0	0
Insomnia	10	8	4	4	6
Drowsiness	0	3	2	0	0
Headache	2	3	3	1	0
Nervousness–Overactivity	3	6	1	0	1
Hyper-Reflexia	2	1	0	0	0
Increased Sweating	1	2	1	0	0
Blurred Vision	1	1	0	0	1
Delayed Micturition	1	1	0	0	0
Abdominal Pain	0	1	0	0	0
Rash–Urticara	1	1	0	0	0
Postural Hypotension	2	2	1	1	2
Dizziness–Vertigo	2	3	1	0	0
TOTAL	51	50	26	9	14

duced the fewest side effects of any of the drugs. In most patients, side effects occurred during the first two or three weeks of therapy and were controlled by symptomatic treatment rather than by reducing the dose or discontinuing the drug. Small fluctuations in blood pressure were observed in 34 patients, and persistent lowering of systolic pressure below 100 mm. Hg. was noted in an additional 24 patients. Postural hypotension was observed in 8 other patients. Hypotension occurred more frequently in patients with low initial blood pressures and in elderly patients with preexisting hypertension. When hypotension occurred late in therapy, it was considered an indication of the drugs' cumulative effect.

The drugs also caused side effects which were indicative of cerebral stimulation. Insomnia was frequently experienced during the early weeks of therapy and was usually controlled by giving a sedative at bedtime. Once the depressive symptoms began to subside, the sleep pattern improved and the sedative could be discontinued. We observed that many patients who had insomnia as a secondary depressive symptom developed motor restlessness that was somewhat similar to that observed with some of the more potent phenothiazines. Fortunately these effects were usually transient and could be controlled by administering a mild sedative or an anti-Parkinsonism agent; reduction in dosage was seldom necessary.

No significant abnormal values were encountered in any of the laboratory studies. Except for an occasional upper respiratory infection or mild gastrointestinal disturbance, no intercurrent illnesses were encountered which required special adjustment in medication.

Conclusion

Based on our results, we feel that all 5 of the antidepressants are effective agents and are generally superior to the amphetamines and phenothiazines in producing remission or relief of primary and secondary symptoms which comprise the depressive syndrome. Generally, the best response to the antidepressants occurs in patients with primary depressive reactions. Most patients with depressive features associated with schizophrenia or organic brain disorders experience significant improvement in depressive symptomatology without experienc-

No serious complications or side effects were produced by the drugs. Postural hypotension, excessive psychomotor stimulation and aggravation of schizophrenic symptomatology were the most bothersome side effects and it would appear that each drug has a similar capacity to cause these reactions. Neither hemopoietic nor hepatic toxicity was evidenced during our experience with the drugs.

BIBLIOGRAPHY

1. Lehman, H. E. : Can. Psychiat. Assoc. J., 4 : 2, 1959.

2. Scherbel, A. L. : Dis. Nerv. Syst., 21 : 67, Mar. 1960.

3. Goldman, D. : Dis. Nerv. Syst., 21 : 76, Mar. 1960.

PROFOUND EXPERIMENTAL SENSORY ISOLATION [1]

JAY T. SHURLEY, M.D.[2]

The nature and range of psychophysiological phenomena evoked in intact humans experimentally exposed in solitude to an environment which profoundly diminishes absolute amounts of sensory inputs has been suggested by Lilly(1). Lilly and Shurley (2) attempted to define relevant physical, physiological, psychological and social conditions for such experiments. Beginning with Bexton, Heron and Scott in Hebb's laboratory(3, 4, 5, 6), many workers(7, 8, 9) have described effects of minimal or partial experimental interference with sensory inputs, or the normal, varied patterning of these, with or without solitude. Bennett (10) and Camberari(11) have used immersion techniques ; their findings are more comparable with those reported here. In an attempt to eliminate further some shortcomings of the early experiments, the author redesigned the apparatus and altered critical aspects of the technique. These modifications are briefly reported here, together with an account of some experimental findings.[3]

METHOD AND PROCEDURE

At the physical level (Figure 1), we aimed at the provision of a constant environment allowing the maximum achievable reduction of ambient physical stimuli, plus the maintenance of a constant level of those inputs impossible to eliminate, such as temperature. A special two room laboratory was constructed at the Oklahoma City Veterans Administration Hospital. The laboratory enabled us to achieve a marked diminution of light, sound, vibration, odor, and taste inputs. A large tank of slowly flowing water maintained at approximately 93.5 degrees F. (34.5°C.) provided simulated weightlessness, a uniform tactile field, elimination of body wastes, and other advantages for our purpose. Inspired air was kept at a constant low pressure, at 70°F., a relative humidity of 45%, and free of odor and other pollution. Automatic controls and continuous tape recorders completed a virtual self-operating system requiring infrequent attention.

At the physiological level, we aimed at the absolute elimination of all sources of pain and discomfort from body position, pressure ischemia and hollow viscus distention. The subject was positioned so as to remain comfortable, though motionless, for relatively long periods. He was under instruction to inhibit body movements to the maximum degree consistent with comfort. Design of the mask and breathing system (Figure 2) allowed effortless breathing without reduction of oxygen tension and without carbon dioxide pile-up. Neutral buoyancy of the body was carefully achieved by appropriate, low stimulation placements of weights or buoyant, soft plastic material around the mask or body.

At the psycho-social level, we sought subjects with distinct personal attributes. The experimental situation *per se* required a somewhat self-selected volunteer with presumed ability for sensitive and accurate self-observation, and better than average memory, recall, and descriptive powers. In the experiment the subject needed to assume the role of a relatively passive, self-maintaining sensor, recorder, recaller and reproducer, with free time, motivated to communicate his experience fully, freely, and with minimal omission and distortion to the interested, relaxed, minimally active and minimally coercive experimenter (Figure 3). With these qualities as relatively constant factors, we collected data related to : A. subject variables : sex ; occupational identity (lawyers, journalists, physicians, psychoanalysts, technicians, nurses, artists and performers) ; chronological age (24 to 74) ; and personality type ; B. four con-

[1] Read at the 116th annual meeting of the American Psychiatric Association, Atlantic City, N. J., May 9-13, 1960.

[2] Professor of Psychiatry, University of Oklahoma School of Medicine ; Chief, Psychiatry Service, VA Hospital, Oklahoma City, Oklahoma.

[3] This project was supported by VA Medical Research. We wish to acknowledge our indebtedness to Ira Goldberg, Ph.D., and Cathryn Walters, B.A., for assistance in many aspects of this research, and to the necessarily anonymous volunteer subjects who actively participated in this study.

ditions, in terms of separation in time and space, of experimenter from the subject in the tank; and C. two alternatives in reporting: immediately following the run, and during the run itself. (Subjects were permitted free choice between alternative conditions of experimenter distantiation, and of reporting.)

Certain considerations seemed relevant at this level, and were observed rigidly. The experimenter and his assistants prepared for the observer role by first using themselves as subjects; the subject was familiarized thoroughly with the experimental conditions by a step-wise series of time-limited runs prior to definitive endurance runs. The identity, and longest times of all subjects were known only to the experimenter.

Strenuous efforts were made to eliminate any suggestion to the subject by project personnel of what might or might not occur. Spontaneous reporting by the subject was encouraged and all queries by the experimenter were general and open-ended in the interviews between the subject and the experimenter. Naturally, the anonymity of each subject and the confidential nature of all personal data were made explicit to the subject and were scrupulously observed. Permission to limit or eliminate participation at any time without prejudice, was specifically granted each subject in advance.

Together, these measures resulted in a state described afterwards by one subject as, "an extremely monotonous state of massive comfort, with built-in confidence and security, yet with an air of fascinating mystery about the outcome."

FINDINGS

Detailed consideration of the manifold aspects of the extensive data is obviously not possible here, and many of the observations lend themselves poorly or not at all to quantitative reporting. A portion of the data are here presented to two ways: first, a condensed, narrative account, much of it in the subject's own words; second, a summary of selected data from many experimental runs by many subjects.

FINDINGS IN ONE SUBJECT

The following is a chronological report from a tape recording of the experience of a 29-year-old married male, college-trained journalist, who desired to write a feature story from first-hand experience, and who felt that the experience might resemble that of the first astronaut.

The familiarization run occurred three days prior to his experimental run and only slightly dampened his enthusiasm, despite the fact that just prior to the run, he unexpectedly panicked when he placed the mask over his head (a thing he previously had done a number of times without undue anxiety). He had to remove and replace the head mask several times before he felt comfortable enough to enter the tank. The experimenter who was standing by, was mildly surprised and reminded the subject that he could stop participation if he wished. The subject declined, however, and once the run started, he continued to its pre-set limit of 3 hours, with the observer in the outside, monitoring position. The familiarization run revealed that the mask leaked badly, and that the tank water at 92°F. was too cold, resulting in chilling. The subject experienced headache and severe stomach cramps, had a vivid fantasy of shopping for a private plane, and was startled to learn that only he had heard dogs barking at one point. He reported aterwards that "that was more peace and quiet than I've ever had by myself," and that he felt unusually calm and relaxed for the remainder of the day. He viewed the total experience as "enjoyable."

EXPERIMENTAL RUN

The subject appeared at the laboratory at 8 a.m. on a Saturday, with a day free of obligations or plans until 7 p.m. His vital signs were normal, and a half-hour saw him launched on his run, with a comfortable mask which leaked considerably less than the one he had used before, yet proved to require self-bailing every half to three-quarters of an hour. He denied anxiety about the mask and expressed great puzzlement as to what had caused his previous panic. With the observation that "the knowledge you are right across that wall impairs the feeling of being alone," he dismissed the experimenter from the immediate scene to a point where he would be available by telephone from 10 minutes away. The subject revealed that he was determined to use his time this day to prepare in his mind an important report and a budget, both due within a week. He elected to report his experience as

it occurred, with tape recorder running. "Everything," he said, "pointed to a 'good' run," and he anticipated a pleasant time.

His first half-hour was spent motionlessly, except for a monologue of his everyday thoughts and concerns. These were : anxiety over a strange and entirely unusual somnambulistic act of his wife's two nights before ; guilt over disappointing his boy's expectations of him on that day ; curiosity about an unexpected letter from a girl friend unheard from for years ; philosophizing about life, and over "What it all means" ; pleasure and pride in his job. ("I've got a front row seat at the greatest show in the world !") ; irritation over and disapproval of the attitudes and behavior of the younger generation of journalists. Following each shift of thought, he would digress briefly into some childhood memory associatively connected. In listening to this tape later, the experimenter was forcibly struck by a curious quality about each remark ; namely, that each was expressed in ambiguous language that, on a different level, invariably could be construed as a comment on a popular fear about the sensory isolation experience. For the above series, this went as follows : embarrassment at doing something slightly ridiculous or crazy ; anxiety over loss of contact with firm ground ; regret over failure to establish a good communication link with another in advance ; concern over being brain-washed ; frustration in the effort to derive some deeper meaning out of the apparently meaningless and ambiguous situation (*i.e.*, the structureless experimental sensory isolation situation) and a turning to the recollection of rich personal sensory experiences enjoyed in the past.

In the second hour his comments concerned his self-thwarted, increasing urgency for "exercise" and physical activity ; amazement at his lack of appetite for a cigarette ; his state of utter loneliness and solitude, save for "my very real companions, my thoughts and memories" ; compassion for the little space-monkey, Sam, who received only half an apple and a glass of water for his dinner after his historic trip 55 miles into space ; thoughts of food and sudden, intense hunger pangs.

He whistled, and then sang the refrain from a popular tune which went, "I'll never get rid of that - - -, - - - - - - !" Apparently he dropped off into a short (less than two minutes) nap ; he woke with a start and the eerie feeling he had just been "out of this world," and with a very vivid, "long" dream, which he struggled to recall. He succeeded in recalling only a part—"a sawdust cream cone."

In the third hour he questioned and then asserted he heard the very faint sound of water trickling (the tape records the sound) ; asserted he heard dogs barking (not present on the tape) ; and commented on a "crackling sound" (unable to verify from the tape). At intervals he sang, increasingly louder, the refrain from a slightly obscene ditty which began, "Roll me over—."

Increasingly strong impulses to action came : "I had an urge to make like a porpoise, but those darned hoses (air supply) won't let me !" Briefly, he seemed to be in quite an ebullient, elated mood. Suddenly, he plunged into grief and tears with the expressed thought, "How many people really think about what it's all about ? How many people ever, ever think—just once—about love ?"

Within seconds, the depressed mood vanished and he was again joking, whistling, and laughing. A make-believe dialogue ensued, as he asked, anxiously, "Joe, what do you do when your engine quits at 200 feet ?," and replied, in a peal of laughter, "You land the sonofabitch !"

Immediately following, his tone shifted and he uttered an angry command ; "You voice ! Keep quiet up there ! Quiet !" He, himself, obeyed, and was silent, but only briefly. He hummed. He sang. He sighed deeply. He yawned. He seemed unutterably bored.

His thoughts turned to his plan to compose his report and his budget, and the belated recognition he had not even begun to accomplish this. In a half-hearted explanation to himself, he said "I just allowed my thoughts to drift." Futility and resignation hung from his tone of voice. He then remarked briskly, "I seem kind of wide awake. I ought to get out !" For a period following this, there was more singing, more humming. Then, "I don't know, but it seems like I heard voices. Somewhere. Male voices. Men's voices. Too bad ! (laughter) It should have been a bunch of dollies !" He laughed again. More singing came.

In a tone of extreme annoyance, he blurted out, "I might just as well be Sam, for all I can be or do or think or hear or be or smell or taste !"

Over the next 10 minutes he argued himself into the position that he was "just wasting time." "After all, I feel fine." "This is ridiculous" (here he referred to his being a grown man bobbing around in the dark in a tank of water in a hole under the hospital). "Besides" he added, "This run isn't producing any data for the doctor, anyway !"

Again, he commented and questioned whether he really was hearing "some noises."

Abruptly, he pulled off the mask and left the tank.

Over the 4½ hours of his run, his longest mute period had been less than 6 minutes.

In the observer room, he dried, dressed, took his pulse (80), his temperature (98.2°) and respiration (16). He guessed that it was now 12:35, and was elated to discover, on uncovering the clock, that it was 1:00 P.M. He picked up the interview card, and dictated into the recorder his response to the first instruction: Give a spontaneous account of the run.

This one was a calmer thing, from the beginning to the very end. I don't know if you got any material out of it you can really use. I enjoyed this one to a degree. I have no specific recollections, except that I seemed to doze quite a bit at first. I don't believe I dictated as much as last time. I don't feel as subdued as after my first run. I feel like I'd like to go out and hunt bear! I feel more exhilarated, refreshed, and rested than I did after that first one. I'm sorry, I don't have a lot to say. [Apologetically], I noticed I thought a lot about women this time.

In response to the question, why terminate now?, he replied,

I had the feeling there were some things I ought to be doing . . . I don't know now, though, what they were . . . I felt like I was "coming to," and I was getting bored, and it just didn't seem like I should stay. That's why I quit now.

Coincidentally, the experimenter returned to the scene at this point, intending to check the operation of the automatic equipment in the outer chamber, and discovered the subject busily interviewing himself. The experimenter remained, listening passively, while the subject continued his report and occasionally injected, or replied to a question. He noted that the subject seemed unusually buoyant, gay, and energetic. He was amazed to hear the subject calmly report that on several occasions he had seen a brilliant white light, that "looked like the sun through a peep-hole," and once had seen an inverted "V" in brilliant blue and white flame moving through dark space toward him. This occurred about half way through the run. Shortly after this he experienced an "extremely strong" and persistent feeling that "someone," identified as friendly, had entered the chamber and was "in the room with me." After these and several similar accounts of experiences in isolation, he apologized, "I have so little to offer this time."

As he neared the end of the interview, he waxed increasingly angry. These feelings reached a climax with the vehement assertion, "I honestly believe, if you put a person in there, just kept him and fed him by vein, he'd just flat die!"

One further observation by the subject deserves mention. He commented on what was to him a curious, paradoxical fact. Although he could visualize his complete budget sheet with photographic clarity in his mind's eye (a feat he is incapable of in everyday life) he simply could not "hold on to it and work with it." "Everything I thought of came to mind much more vividly than it would outside, but I simply could not concentrate." In addition, he noted that certain mental images experienced on a previous trial run could be recalled as freshly as if they had just happened.

The post-run interview lasted an hour and a half, during which time he lit one cigarette, but took only one or two puffs (he is almost a chain-smoker in everyday life). He also ignored a proffered cup of coffee, which turned cold on the table before him —a thing he ordinarily would never have allowed.

His buoyant mood and unaccustomed energy persisted throughout the day, and he reported that "nothing else unusual—nothing at all" had occurred when he was queried a week later. However, a colleague of the experimenter's happened to hear him reading a newscast on the evening following the day of the run, and noted that the subject, usually a facile and accomplished speaker, hesitated momentarily and stumbled in pronouncing the words "water" and "Medical Center," but gave no indication of awareness that he did so.

The news feature which he planned remained uncompleted 4 months later.

FINDINGS IN GENERAL

Results under the two alternatives of reporting (*i.e.*, retrospective or both simul-

taneous and retrospective reporting) permit the observation that simultaneous reporting generally was much richer in detail and appeared to inhibit less the revelation of marked deviations from usual feeling states, imagery, and thought content. Retrospective accounts, however, were most revealing. Put another way, the healthy ego seemed to possess an incredible degree of ability to utilize repression and other defensive mechanisms that drastically limited the full reporting of experience. With only an occasional exception, persons having had considerable subjective experience of analytic-type psychotherapy consistently reported fuller and less distorted retrospective accounts of what is called "ego-alien" or "primary process" experience. Subjects with experience as analysts reported even more of this experience and with even less distortion.

No generalizations are possible as yet regarding the effects of temporal and spatial distantiation between subject and experimenter. It was obvious that anxieties of both were significant in determining what was requested and allowed, but other factors also are involved.

For many reasons, the reporting of findings in the area of mental imagery is exceptionally difficult, yet one of the most dramatic findings of these experiments concerns this very area. Mental imagery phenomena, broadly conceived, invariably were present in every run of every subject in our series, although conditions of reporting dictated that in some instances they were inferential, rather than direct. The variety of these experiences defies classification and description. For example, consider how one would classify this: "I strongly felt that I was stirring with my left leg, and it was a spoon in an iced tea glass, just going round and round. I 'came to' with a start to realize that my leg *was* going round and round." By contrast, the following seems easy to classify: "I suddenly saw in the darkness before me a field of golden toadstools, with the sunlight brightly reflected from the stem of one." The latter experience might be described as purely visual, three dimensional, and in color. The subject was able to paint a picture of what she saw. A fuller description of data on mental imagery soon will be available elsewhere(12).

Under the extreme conditions of our experiment, clear limits of what might be expected (for example, what might be heard) were non-existent. Two physician subjects independently reported having been startled to hear, without benefit of stethoscope, their own heart sounds at ear-filling intensity. One of them reported having heard repeatedly the snapping sound of his own aortic cusps closing at the end of each systole. A third physician subject reported in awe that for the first and only time of his life he heard the gliding sound made by moving his large joints. Such reports, if verified, raise the interesting question of whether they are to be regarded as instances of enhanced sensory acuity, lowering of sensory thresholds, or enhanced ability to fix attention.

There was a general tendency, following a run, for pulse, respiratory rate and blood pressure to drop moderately, and for body temperature to rise slightly, although exceptions were noted. Nine of the 12 subjects made runs exceeding 180 minutes, but none exceeded 400 minutes. Within this range, post-exposure feeling states varied both between subjects, and for the same subject between runs. We saw marked calmness and extreme irritability, buoyancy and lethargy, vigilance and somnolence. Most frequently we observed a peculiar, mixed state characterized by calm, clear mental vigilance, coupled with lethargy, muscular relaxation and a decided disinclination for exercise, but without any sense or sign of fatigue.

DISCUSSION

The single run reported here is not atypical. There are wide individual variations in specific mental content, but much fewer variations in form and sequence of events.

When one takes out light and sound, one perforce puts in darkness and silence; when one takes out change and structure, one puts in monotony and non-structure. When one takes away gravity, a state of weightlessness obtains. Thus, every "negative" state has "positive" consequences. In terms of these consequences, the former (or

negative) state may be far more potent, regardless of how much physical energy input or stimulus is denied. As a matter of fact, for a conscious human, the *absolute* elimination of *any* sensory input, save for special modalities within very narrow limits (*e.g*, visible light), is impossible, and can be approached only asymptotically.

Conclusions

A feasible and effective method has been described for studying a wide range of psychophysiological phenomena under circumstances permitting exceptionally effective isolation and demonstration of discrete elements in the complicated, interconnected patterns and sequences underlying even the simplest human act or experience.

A number of hypotheses relating to very fundamental issues can be erected from these observations and can be subjected to experimental testing. In due course, such experiments may contribute to a more adequate understanding of human behavior.

BIBLIOGRAPHY

1. Lilly, John C. : Mental Effects of Reduction of Ordinary Levels of Physical Stimuli on Intact, Healthy Persons. Psychiatric Research Reports, #5, APA, June 1956.

2. Lilly, J. C., and Shurley, J. T. : Experiments in Solitude in Maximum Achievable Physical Isolation with Water Suspension of Intact, Healthy Persons. Read, in part, at the Symposium on Sensory Deprivation, Harvard Medical School, Boston, June 1958. To be published.

3. Heron, W., Bexton, W. H., and Hebb, D. O. : Am. Psychologist, **8** : 366, 1953.

4. Bexton, W. H., Heron, W., and Scott, T. H. : Can. J. Psychol., **8** : 70, 1954.

5. Heron, W., Doane, B. K., and Scott, T. H. : Can. J. Psychol., **10** : 52, 1957.

6. Heron, W. : Scientific American, **196** : 52, 1957.

7. Vosburg, Robert L. : Sensory Deprivation and Isolation, Psychiatric Communications, Pittsburgh, Oct. 1958.

8. Solomon, P., Liederman, H., Mendelson, J., and Wexler, D. : Am. J. Psychiat., **114** : 357, Oct. 1957.

9. Wheaton, Jerrold L. : Fact and Fancy in Sensory Deprivation Studies, Review 5-59. Aero-medical Reviews, School of Aviation Medicine, USAF, Brooks AFB, Texas, Aug. 1959.

10. Bennett, A. M. H. : Sensory Deprivation in Aviation, Read at Symposium on Sensory Deprivation, Harvard Medical College, Boston, June 1958.

11. Camberari, J. D. : The Effects of Sensory Isolation on Suggestible and Nonsuggestible Psychology Graduate Students. Unpublished Doctoral Dissertation. University of Utah, 1958.

12. Shurley, Jay T. : Mental Imagery in Profound Sensory Deprivation and Isolation. To be published in the Volume Reporting AAAS Symposium on Hallucinations, Washington, D. C., Dec. 1958. (L. J. West, Ed.).

DISCUSSION

John C. Lilly, M.D. (St. Thomas, Virgin Islands).—The importance of this work seems to lie, not in its testing and extension of research on isolation and confinement in water which I began in 1954, but in the fact that a group is doing profound isolation and confinement in a water immersion situation. It has been my impression, and my published opinion, that this kind of isolation, in which all possible sensory inputs and information exchanges with the physical and social surroundings are reduced towards zero, will be a fertile source of knowledge of the human mind in a short term and in a long term sense.

When this work was initially presented in 1956 in the *Psychiatric Research Reports No. 5* (Lilly) it was inadvertently linked up with a negative aura conditioned by the brain washing milieu in which similar studies were being carried out in the laboratory of Dr. Donald Hebb. It also suffered from being born in an atmosphere of research on mental illness. I do not feel that either of these bedfellows can benefit except by products from the research. The research itself should be on a much broader biological and psychological basis. To put it very simply, our curiosity about the functioning of human minds can be satisfied and intrigued by these techniques as by no others. The amount of information which can be, and is, generated by each subject in these experiments in a few hours can be mountainous and overwhelming, even as it can be by a freely associating person lying on a couch. The advantage of the watertank over the couch is that the conditions are more extremely isolating and there is a

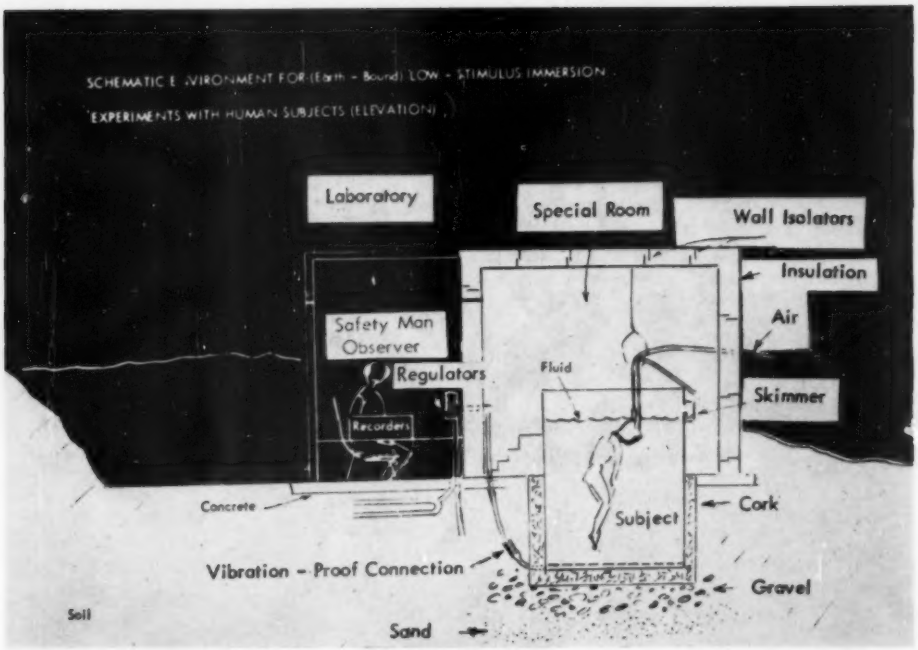


FIGURE 1

SCHEMATIC ELEVATION OF EXPERIMENTAL SENSORY ISOLATION LABORATORY

FIGURE 2

SUBJECT WEARING HEADMASK FOR UNDERWATER BREATHING

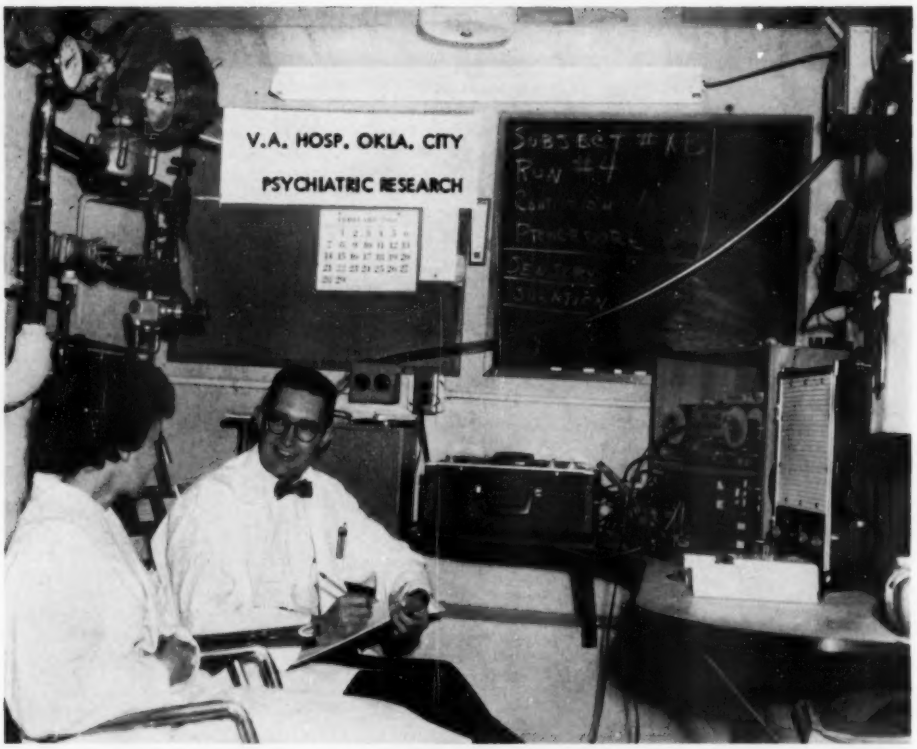


FIGURE 3

THE POST-RUN INTERVIEW. THE AUTOMATIC WATER INPUT CONTROLS AND THE TAPE-RECORDERS ARE SEEN IN THE BACKGROUND IN THE OBSERVER ROOM OF THE LABORATORY

greater degree of true aloneness achievable in the tank. For healthy subjects this has the distinct advantage of lessening the feeling of someone looking over one's shoulder watching one's thinking processes. One can, as it were, really be free of supervision, the necessity of exchanges and the necessity of organization of one's thinking for the purposes and activities of others.

The truly individual aloneness achievable by this method allows one to find out the following basic facts :

1. The human mind is not a solipsistic cesspool of circuitous internal feedbacks. "Pure thought thinking of itself" is not the net result of such work.

2. The human mind in this situation can be seen to be a true source of continuous new information, some recorded in the past but inevitably generating new relationships interwoven with information recently derived from social realities and from the anticipated future.

3. Demonstrations of the portions of the human psyche which are not under the immediate control of one's own self are shown in a dramatic and immediate fashion to those who are ready to see them.

4. In my own experience, and apparently in that of some others, who have been through these experiences (and similar ones in prisons, small sailing vessels and polar huts), one gains an increased awareness of, and a willingness to move with, power, speed and integrity along the lines of one's life situation along which one really and truly wishes to move. The long term effects of repeated satisfactory exposures to these extreme conditions in several cases have been quite rewarding.

In contrast to most other isolation experiments, there seems to be an underlying thread of a reward balance in the reward and punishment account book in the immersion type experiments. Once a satisfying solution to the technical matters is provided for the subject, I found, as have Shurley and Bennett, that the subjects want to repeat their exposures and seek out opportunities to do so. One may ask if addiction might develop. My answer is No, eventually one becomes weaned from such artificial aids for exploring one's mind. In my experience practically everyone who has been through this has been very much impressed with the experience. No one has yet called it trivial.

CLINICAL NOTES

(The Clinical Notes report the findings of the authors and do not necessarily represent the opinions of the Journal.)

THE EFFECT OF R-1625 (HALOPERIDOL) IN MENTAL SYNDROMES : A MULTIBLIND STUDY

H. AZIMA, M.D., H. DUROST, M.D., AND DOROTHY ARTHURS, R.N.[1]

Haloperidol [2] was recently introduced as a "major" non-phenothiazine neuroleptic agent.[3] It is chemically not related to any known tranquilizers and is a 4'fluoro-4-1-(4-hydroxy-4-(4'-chloro)-phenylpiperidino)-butyrophenone.

Haloperidol's therapeutic efficacy was tested in a research setting consisting of a "pharmacotherapeutically blind unit," *i.e.*, a hospital service where all drugs are given at random and used blindly, *i.e.*, without the knowledge of the service team made up of one intern, 2 assistant residents, one resident, one psychologist, 2-4 nurses, one social worker and one occupational therapist. An average of 4 drugs and one placebo are tried on this unit at any given time. The final assessment is through the pooling of the opinions of the different members of the team. Because of the use of this "pharmacotherapeutically blind" routine and blind assessment by "multiple observers," the regime is called "multi-blind." The degree of therapeutic efficacy is assessed through a simple rating scale graded from 0 to 4, consisting of two parts (behavorial and experiential) and designed mainly to show the changes in the target symptoms. Only "marked" to "moderate" improvements are taken as significant.

Forty-two patients received haloperidol and 42 placebo. Haloperidol receiving patients consisted of 23 neurotics (5 anxiety hysterias, 3 chronic anxiety states, 2 obsessives, 10 mixed neuroses, 2 depression plus anxiety, and one character disorder) and 19 schizophrenics (3 simple, 1 catatonic, 14 paranoid and one schizoaffective). Placebo receiving patients consisted of 27 neurotics (1 anxiety hysteria, 4 chronic anxiety states, 4 obsessions, 11 mixed neuroses, 4 depression with anxiety, 2 hypochondriasis, and one character disorder) and 15 schizophrenics (1 simple, 1 catatonic, 12 paranoids and one schizoaffective). There were 27 males and 15 females with an average age of 40 in the haloperidol group and 25 males and 17 females with an average age of 38 in the placebo group.

All patients received the drugs orally with an average haloperidol dose of 6 mgm. daily (maximum 24 and minimum 2 mgm.) with an average duration of 3 weeks (maximum 3 months, minimum 10 days). The regime of drug and placebo administration was that of "gradual increase."

Comparison of the results in drug and placebo groups revealed 38% marked to moderate improvement in haloperidol treated patients, in contrast to 11.8% in placebo treated patients. Out of 23 neurotics treated with haloperidol, 6 (2 anxiety hysterics, one chronic anxiety state, and 3 mixed neurotics) showed moderate and one anxiety hysterics marked improvement; while in 27 neurotic patients treated with placebo, 4 (1 anxiety hysteric, 1 chronic anxiety state and 2 mixed neurotics) showed moderate improvement. Out of 19 schizophrenics treated with haloperidol, 4 showed marked and 5 moderate improvement; while in 15 schizophrenics treated with placebo only one patient showed moderate improvement.

Side effects were relatively numerous and disturbing to the patients. These consisted mainly of extrapyramidal symptoms : body

[1] From McGill University, Dept. of Psychiatry, Allan Memorial Institute and Verdun Protestant Hospital, Montreal, P. Q.

[2] R-1625 was supplied by G. D. Searle & Company.

[3] International Symposium on Haloperidol, Beerse, Sept. 5th, 1959, Les Editions "Acta Medica Belgica," Brussels, 1960.

rigidity and facial muscle tension in 15, oculogyric crises in 2 and generalized tremor and jitteriness in 10. In addition, G.I. symptoms such as vomiting, nausea, anorexia, *etc.* were noted in 7 patients, hypotension in 11, weakness and syncope in 9, extreme fatigue and sleepiness in 7, drowsiness in 5, blurred vision in 1 and dysuria in 1 patient. The appearance of extrapyramidal symptoms were directly related to the dosage. Beyond 20 mgm. per day, almost all patients developed these symptoms. Changes in biochemical studies done once a week (liver function, blood count, transaminase and urine analysis) were minimal.

The final impression was that haloperidol was a moderately potent neuroleptic, much less effective than claimed by European authors, with numerous side effects. However, its greater potency in schizophrenic states indicated the necessity of further studies in this area.

PRELIMINARY REPORT ON MELLARIL IN EPILEPSY

MARIE M. FRAIN, M.D.[1]

After concluding a pilot study in which a ward of 50 psychotic geriatric patients became more manageable and less disturbed within a month using Mellaril,[2] a major project was started for evaluation of its use in severely disturbed epileptics with psychoses. Comparative charts on seizures, behavior, and personality during three time spans were selected for intensive study.

NO TRANQUILIZER PERIOD (1952-1954)

Of the 70 white females chosen, all but 22 had been in the hospital 10 years or more. Behavioral characteristics: belligerence, unpredictability, unkemptness and uncooperativeness. Phenobarbital gr $\frac{1}{60}$ H.S. constituted the only sedative. Many of the individuals required wet packs, cuffs and strait jackets. Wards were noisy and disruptive.

THORAZINE PERIOD (1958-1960)

This same group was given chlorpromazine, 300 to 600 mg. in 24 hours, depending on individual needs. All but 12 (82%) definitely improved physically and mentally. Many received ground privileges, some participated in occupational therapies, and many enjoyed recreation hall facilities. Wards became quieter and patients more easily managed. Wet packs were discontinued and strait jackets and cuffs were discarded.

MELLARIL PERIOD (MARCH 1, 1960 TO THE PRESENT)

Mellaril was begun on the same group with no interim rest period, since without tranquilization, violence would have recurred. The usual 100 mg. t.i.d. dosage of Mellaril was increased for 10 patients to the amount of 150 or 200 mg. t.i.d. at the end of 3 weeks. Rarely have other changes been needed and after 6 months the whole group seem to be adjusting nicely.

RESULTS

All were disturbed while the only sedative was phenobarbital.

TABLE 1
THIORIDAZINE SIDE EFFECTS

Symptoms	*Number of Patients*
Dry Mouth	1
Extrapyramidal	0
Drowsiness	With dose 400 mg. or more.
Change in Blood Pressure	0
Dermatitis	0
Nausea (slight)	5
Lactation	0
Edema	0
Blood Dyscrasia	0
Retinitis *	0
Jaundice	0

* Opthalmologist cooperated for eye examinations.

[1] Wyoming State Hospital, Evanston, Wy.
[2] Sandoz & Company, Hanover, N. J.

Fifty-eight patients improved on thorazine. Seventy out of 70 were maintained on Mellaril with 61 (87%) receiving added benefit over and above what thorazine was able to do. Side effects were negligible. (Table 1.)

Conclusions

1. Mellaril is a smooth acting, efficient therapeutic agent in the treatment of the psychotic patient.
2. Nausea is not masked.
3. Side effects in this study have been negligible.
4. Mellaril proceeds to aid psychotics with their behavioral problems over and beyond what thorazine is able to do.
5. Fewer accidents reported during the 6 month period.
6. Relatives visit chronic epileptics more often and receive greater pleasure from visiting, since all patients have been maintained, improved, or markedly improved.[3]

[3] Comparative seizure charts will, we hope, give valuable further information at the year's end. Laboratory results will also be closely evaluated.

TRIFLUOPERAZINE AND TRANYLCYPROMINE IN CHRONIC REFRACTORY SCHIZOPHRENICS

WALTER KRUSE, M.D.[1]

In previous reports(1, 2), we have discussed the usefulness of trifluoperazine in treating schizophrenics and particularly in controlling hallucinations. For the present study we selected 40 chronic schizophrenic women who had not improved on trifluoperazine or any of the many other neuroleptics they had received. These were truly the "hardcore" patients; their average length of hospitalization was 12 years, during which time they had received virtually every kind of therapy.

The most prevalent symptoms in these patients were apathy, withdrawal, lassitude, psychomotor retardation, and inability to concentrate. With this symptom pattern in mind, we began adding imipramine to the trifluoperazine already being given. Noting no response, we then tried several monoamine-oxidase inhibitors in succession. The most promising results were seen with a combination of trifluoperazine and tranylcypromine,[2] a non-hydrazine MAO inhibitor. Dosage was individualized for each patient. Most patients were already being maintained on trifluoperazine, 10-15 mg., b.i.d., and tranylcypromine was then added in doses of 10-30 mg. daily. In 12 patients who had been well-maintained on chlorpromazine, the MAO inhibitor was merely added to the established regimen. Duration of the study was 3 months.

Results

Nine of the 40 patients were considered much improved at the end of the study. One of the 9 was receiving chlorpromazine, 200 mg. b.i.d., and tranylcypromine, 20 mg. b.i.d.; the other 8 were receiving trifluoperazine and tranylcypromine. Although 9 out of 40 is a small percentage, it must be kept in mind that these were among the most refractory patients in the hospital, and any improvement is notable in view of the lack of response to all previous therapies. The remaining 31 patients showed no better response to this combination than to any previous treatment.

Discussion

The 9 patients who benefited showed their improvement by manifesting more interest in their surroundings and an increase in psychomotor activity where it had been previously lacking. Two of the 9 had been semistuporous before treatment.

There was a marked decrease in apathy and lassitude and an increase in ability to concentrate and make decisions. Improvement came about slowly in most cases, becoming gradually more apparent within the

[1] Chief of Female Service, Danvers State Hospital, Hathorne, Mass. Present address: Bundiswung 8, Westerland/Sylt, West Germany.

[2] The drugs used in this study were provided by Smith Kline & French Labs.

second and third month. In 3 patients in whom auditory hallucinations and delusions were major symptoms, these symptoms were greatly lessened or entirely relieved.

Since there was little symptomatic difference between the patients who responded and the majority who did not, no reason is apparent as to why the combination of trifluoperazine-tranylcypromine worked in some cases but not in others. It is encouraging, however, that 9 of these seemingly hopeless patients did show a notable improvement. Further work on this combination is needed, but it is our impression that these drugs warrant a trial in the chronic refractory schizophrenic patient.

BIBLIOGRAPHY

1. Kruse, Walter: Am. J. Psychiat., **115**: 1031, May 1959.

2. _____: Am. J. Psychiat., **116**: 318, Oct. 1959.

METHYLPHENIDATE INTERVIEWS IN PSYCHOTHERAPY

GEORGE A. ROGERS, M.D.[1]

Oral methylphenidate [2] to enhance psychotherapy was studied in 16 outpatients for a year. It has been helpful intravenously in alcoholics (2, 4).

A double-blind procedure was used. Each interview was rated in 3 areas: emotional expression, verbalization, and constructiveness.

Six months was spent in the study of the reaction of patients to the drug prior to the study. The general nature of the study was explained to the patients beforehand. A 10 mg. tablet was given one hour before the appointment on an empty stomach. The total dosage per interview was then adjusted to 40, 60 or 80 mg. one to one-and-a-half hours prior to the interview, depending upon the patient's reaction.

This study was more effective than most double-blind studies, since a physiologically effective dose was insured with each patient. The routine administration made any detectable physiologic effect inconspicuous. The experiment indicated that the drug would be of greater use when used selectively rather than routinely.

Experience with the drug emphasized the variability of its reaction, particularly with psychiatric patients.

1. Doses ranged from 10 mg. to 80 mg. In psychotics, even 10 mg. was extremely disturbing. In withdrawn and unemotional patients, 60 to 80 mg. had little discernible effect.

2. Two patients complained of a rebound depressive effect 3 to 4 hours after taking the drug. One patient had an attack of suffocating feeling similar to globus hystericus on 60 mg. with panic. This was relieved by intramuscular chlorpromazine.

3. One patient subject to seizures about once yearly had a severe headache the remainder of the day when he took 10 mg. of methylphenidate. Another patient with migraine had a one-sided headache after taking 60 mg. It would, therefore, appear that in the dosage used methylphenidate has a slight tendency to be a convulsant.

4. One patient had a recurrence of partial dissociation on the occasions when he took the drug.

5. There were 4 instances in which patients attributed effects to the drug which later appeared to be definitely psychological.

There were 3 groups of results: a definite helpful effect; a definite harmful effect; and little appreciable difference.

In two obsessive compulsive and one phobic patient, the drug was unequivocally helpful. The same was true for two patients who had psycho-physiologic reactions as depressive equivalents. These patients had illnesses of long standing. In psychotics and pre-psychotics the drug seemed definitely contraindicated, not only because of the anxiety it provoked, but because even where the verbalization or emotion was in-

[1] Gloucester County Guidance Center, Woodbury, N. J.

[2] Study conducted under a research grant from Ciba Pharmaceutical Products, Inc., Summit, N. J., who supplied methylphenidate as Ritalin.

creased, the constructiveness or the usefulness of the drug interviews was definitely less. Acute anxiety reactions seemed to be aggravated by the use of the drug. Straight depressions did not benefit materially from the use of this drug. There was a difference in the subjective effect of the drug between those who were helped and those who were hindered. The patients who were helped generally found the drug pleasant and felt elated and high. Those who were hindered complained of an unpleasant production of tension. The medication was not helpful in poorly motivated patients.

The difference between the patients who were helped and those who were not was whether the illness was in a state of flux or not.

The study supplied a new insight into the problems inherent in the "double-blind" method(6). Particularly with drugs it is necessary to establish the dose of the medicine which will be physiologically effective in each test subject. In addition, it must be kept in mind that some drugs suppress at one dosage and stimulate at another. The level for these effects varies from person to person and from one occasion to another.

SUMMARY

1. The use of oral methylphenidate to potentiate interviews in 16 office psychotherapy patients was studied for a period of one year. Results indicate that in patients with fixed neurotic processes it can speed the therapeutic progress.

2. The drug gave no physical complications in 16 healthy subjects in doses that were two to four times that ordinarily prescribed. Dosages ranged from 40 to 80 mg. orally per dose.

BIBLIOGRAPHY

1. Martin, A. J. : Internat. J. Social Psychiat., 3 : 188, 1957.

2. Hartert, D., and Browne-Mayers, A. N. : J.A.M.A., 166 : 1982, Apr. 19, 1958.

3. Lewis, D. J., and Sloane, R. D. : J. Clin. & Exper. Psychopath., 19 : 19, Jan.-Mar. 1958.

4. Blair, R. D., Shafer, S., and Krawiecki, J. A. : J. Ment. Sci., 105 : 1032, Oct. 1959.

5. Smith, G. D., and Beecher, H. K. : J.A.M.A., 172 : 15, Apr. 9, 1960.

6. Darvill, F. T., Jr. : J.A.M.A., 1739, Apr. 11, 1959.

7. Smith, C. M. : Quart. J. Stud. Alcohol, 19 : 406, Sept. 1958.

IMIPRAMINE TREATMENT

MICHAEL J. KEITH, M.D.[1]

To follow-up my previous clinical note on experience with several "anti-depressant" drugs in private psychiatric practice :

I have abandoned the use of the MAO inhibitors, as I have noted no therapeutic response, and have continued to use imipramine on a somewhat larger scale. There appears to be a variable anti-depressant action associated with imipramine in doses of 75-300 mgm. a day. This is not consistent, and it is difficult to predict which patients will respond. My impression is that in severe agitated depressions the response is minimal. Also, depressions marked by extreme withdrawal and anergia show poor response unless an amphetamine-type drug is given concurrently.

My present practice is to prescribe imipramine 25 mgm. q.i.d., combined with a milder ataraxic, or if agitation is marked, a phenothiazine derivative. If the patient is anergic, an amphetamine-type drug is administered. Concurrently, bedtime hypnotics are used if required. The dosage of imipramine is raised as needed to a maximum of 200 mgm. per day.

The time of response appears to be variable from 2 days to about 2 weeks. The manic-depressive patient reported in my previous paper has responded to imipramine on three occasions within 2 days when combined with promazine.

An interesting complication of imipramine therapy has been noted in 5 male patients in the 50-65 year age group. In 4 of these, complete urinary retention took place while on a dose of 75-100 mgm. per

[1] 745 Graydon Ave., Norfolk, Va.

day. In another patient some difficulty in voiding took place. All these patients had moderate prostatic enlargement. On one of them a transurethral resection was done; the other patients either had the dosage lowered, or a Foley catheter was inserted to ameliorate the symptom.

It is not possible to fully implicate the imipramine, as, of course, many of these patients were receiving other medication which have effects on the autonomic nervous system (such as the phenothiazines and in one case, probanthine). However, it is well worth while to bear this in mind and treat quite seriously any complaint of difficulty in voiding in a middle-aged male on imipramine.

In summary, imipramine appears to be a potentially useful drug in the treatment of depression, but its action is unpredictable and apparently is not highly effective in the more severe cases.

IMIPRAMINE HYDROCHLORIDE (TOFRĀNIL) AND ENURESIS

R. E. G. MacLEAN, M.B., B.S., D.P.M.[1]

In the course of studying the application of imipramine hydrochloride (Tofrānil) to depressive states encountered in adults attending the Observatory Clinic, a mixed adult outpatient and child guidance clinic under the Victorian Mental Hygiene Authority, the senior psychologist (Mr. Hugh Esson) suggested that this drug might be of use in the management of enuresis in children. It was tried, and, possibly as a result of the difficulty in initiating micturition which is reported as a side-effect of the drug by a proportion of adult depressive patients, it has had a marked symptomatic effect in doses of 25 to 50 mgm. each evening.

The smaller dose is effective in the majority of enuretic children under 12, the larger in those older, in ensuring that most nights are dry; even in those consistently wetting. Inert tablets resembling the genuine ones have not yet been used in a controlled study, and no conditioning to dryness such as frequently follows treatment with electrical awakening apparatus has been noted, for children relapse as soon as the drug is withdrawn.

Nevertheless it is useful to have at one's service a drug which can, for example, mitigate the severity of parental attitudes by removing, while this treatment continues, a main excuse for aggression. Again it is useful to be able to place in a child's hands a means of allowing his attendance at Scout, Cadet, Church, *etc.*, camps free from his former fear of wetting.

The medical staff of this Clinic are continuing this study, but it is encouraging enough to warrant this brief note in the hope that wider application as a result might lead to fuller evaluation, and in the meantime to more comfortable nights for some of the ashamed incontinent in our care.

[1] Psychiatrist Superintendent, Observatory Clinic, South Yarra, Victoria, Australia.

A STUDY WITH NORETHANDROLONE (NILEVAR)[1] IN A MENTAL HOSPITAL ON PATIENTS WITH BOWEL AND BLADDER INCONTINENCE

SOL SHERMAN, M.D.[2]

Inability of physicians to treat effectively bowel and bladder incontinence due to mental and emotional factors poses a serious problem. Initial studies by Saunders and Drill of a group of anabolic steroids showed(1) that norethandrolone (Nilevar) produced an increase in weight of the levator ani muscles of castrated rats, and at the same time exhibited minimal androgenic effects. Vlavianos and Fink studied

[1] Nilevar was supplied by G. D. Searle & Co.

[2] Metropolitan State Hospital, Waltham, Mass.

(2) 11 male patients in the first clinical trial of norethandrolone for the control of bowel and bladder incontinence. They found norethandrolone effective within one week in stopping wetting and soiling in 6 of their patients. A follow-up study by Vaisberg, Michael and Saunders showed (3) that norethandrolone achieved excellent clinical results in 7 of 9 elderly patients treated for bladder and bowel incontinence.

In the present study 13 of the most severely incontinent patients at the Metropolitan State Hospital were placed on Norethandrolone. The ages of these patients ranged from 31 to 80 years. Eight of them had schizophrenia (2 catatonic, 2 hebephrenic, 1 paranoid, 2 of chronic undifferentiated type and one other unspecified), 2 had Alzheimer's disease, one had syphilitic meningoencephalitis and one had Korsakov's syndrome. These patients had been hospitalized for periods of 6 months to 29 years.

The severity of the problem of incontinence was judged by whether the patient soiled 1 or 2 times daily, 3 or 4 times daily, 5 or more times daily, or continually. The severity of the condition was rated by the numerals, I, II, III and IV, respectively; initially, two patients were rated as I, 5 as II, 3 as III and 3 as IV.

The patients received norethandrolone for periods of 8 days to 5 months. They were given 10 mg. by mouth t.i.d. Following initial norethandrolone therapy, the drug was discontinued simultaneously in all patients with no further medication administered unless incontinence returned.

Initially 7 patients showed excellent improvement, 2 good improvement, 2 fair improvement and in 2 the condition was unchanged. Two patients whose incontinence was intractable were subsequently given 50 mg. of norethandrolone intramuscularly, followed by no medication for one week, then the injections of 50 mg. were repeated, but again without any clinical improvement.

Supplementary norethandrolone therapy was required in 5 patients. At this point dosage was individualized according to patients' needs. Three of these patients had fair results, receiving 10 mg. of norethandrolone t.i.d., but two patients did not respond to this dosage and were given 20 mg. t.i.d. Both patients failed to respond to the higher dosage. The one patient of the original 13 continued to refuse to take the medication and was dropped from the study after approximately two months of therapy.

Conclusion

Norethandrolone was effective in controlling bowel and bladder incontinence in 10 of 13 patients who had been hospitalized for periods of from 6 months to 29 years. The most severely incontinent patients at the hospital were chosen for this study.

Upon conclusion of the study the improvement in 6 patients was excellent, in 1 good, in 3 fair improvement, in 2 it was unchanged, and one patient was dropped from the study because he refused to take the medication. A daily dose of 30 mg. by mouth was effective in most instances. No side effects were noted at any time during norethandrolone therapy. The mechanism by which norethandrolone exerts its anabolic action is not fully understood, and further studies in this area are planned. The results of this study are in agreement with those of Vaisberg and his co-workers and Vlavianos and his associates.

BIBLIOGRAPHY

1. Saunders, F. J., and Drill, V. A. : Proc. Soc. Exper. Biol. Med., 94 : 646.

2. Vlavianos, G., and Fink, L. : Am. J. Psychiat., 115 : 164, Aug. 1958.

3. Vaisberg, M., Michael, C., and Saunders, J. C. : Am. J. Psychiat., 116 : 938, April 1959.

CASE REPORTS

THE GAMBLER AND HIS LOVE [1]

IAGO GALDSTON, M.D.[2]

The psychiatrist, unlike the clinician, does not have either ample means or frequent opportunities for testing out his postulations as to the aetiology, the basic pathology, and the therapeutic handling of a given case. Psychiatry has nothing that equals in specific relatedness the tuberculin, the Schick, or the sugar tolerance test. Psychiatry lacks the equivalents of Koch's postulates, so determinate in establishing the authenticity of the causative agents of the infectious diseases. It is therefore rewarding to come upon an instance wherein the patient's own life experience confirms, at a later time, the validity of the formulations, postulated earlier, to account for the dynamics of his psychopathology.

It is such an experience that I wish to detail here. I initially described the patient in a paper published in *Mental Hygiene*, in October, 1951. The title of that paper was "The Psychodynamics of the Triad, Alcoholism, Gambling, and Superstition." The gambler was one of the "triad." Here I will describe him only sketchily, leaving out many details of his anamnestic history. They are not really relevant to the substance of this presentation.

The patient was, as he is today, an habitual and compulsive gambler. He did not in the first instance come for therapy because of his gambling; on the contrary he accepted gambling as a normal and even desirable component of his life pattern. His complaint was of a mild and, as it proved, a transient sense of depersonalization. It was associated with and had been precipitated by, the development of a psychotic reaction in his older brother. The patient had identified with and had introjected his sick brother.

The patient was an almost completely illiterate Jew, 44 years of age, married, and the father of two children. He was successful in business, shrewd, intelligent, and wealthy. He gambled consistently, and had done so since he was 12 years of age. He was in no sense a professional gambler. He gambled, as he phrased it, because he *had* to gamble. It temporarily relieved him of some kind of tension, the nature of which he did not understand and could not describe. I was intrigued by what he termed his "tension," and endeavored to trace its aetiology, as well as to fathom the mechanism by which he gained relief in gambling.

Here I will only present my conclusions as to the aetiology of his tension, without citing the anamnestic data from which they were derived. These data can be found in the earlier paper.

The patient had suffered early and severe deprivations in his affect relations with his parents. He was born in a small village in Poland, and grew up in poverty and squalor. His father was early separated from his mother and lived in a distant village. The patient was apprenticed to a shoemaker at the age of 7. From that age until he married, he had had no home. He was thus deprived of that rounded cycle of contacts and interpersonal reactions with parents and siblings that is so essential to a healthy development through infancy, childhood, adolescence, and youth. In consequence, he was, psychologically, continuously harking back to that childhood period in which he had suffered his arresting deprivations. There he had become compulsively fixated and unable to advance. He thus carried into the age of maturity, and included in his adult personality, the emotional and psychological dynamisms and the relational configurations of his childhood and pre-adolescent periods. His gambling was figuratively the behavior of a child to whom gifts may

[1] Read at the 116th annual meeting of The American Psychiatric Association, Atlantic City, N. J., May 9-13, 1960.

[2] The New York Academy of Medicine, 2 East 103 St., New York 29, N. Y.

come by mere solicitation, or by teasing for them, as indeed *is* the case in the child's experience.

In this aetiologic perspective the neurotic gambler can be seen as compulsively acting out a plea to Lady Luck, symbolic of the surrogate figures, mother and father, but mainly mother, for a show of favor, for the affirmative response to the questions: "Do you love me?" "Do you approve of me?" "Do you think I am good, and smart, and strong?"

The neurotic gambler is compulsive in his need to pose these questions and obsessive in his uncertainty. Since he cannot gain a definitive and a for all time reassuring answer, the gambler continues to gamble until he loses. The neurotic gambler seldom, if ever, "quits" when he has made a "killing." He has a compulsion to lose and stays in the game until he loses, in other words until he is without the means to continue gambling. The neurotic gambler's compulsion to lose is understandable, for the more he wins, the more means he has wherewith to gamble, and the more intensive becomes the gambling. Release is to be found only in losing. The questioning can thus be deferred until the next time: until the next game.

Few gamblers come for psychiatric treatment, with gambling as their chief complaint. My patient complained of his sense of depersonalization, not of his gambling. In treatment he reintegrated his personality without much difficulty. After a year of therapy he returned to his accustomed world and its accustomed ways.

Five years later the patient called for an appointment, complaining of what amounted to an acute anxiety. He was again accepted for therapy, and therein we come to The Gambler and His Love.

The gambler, as I reported previously, was married and had two children. He was fond of his wife, as a son might be of his mother. He provided her with all the comforts she desired, but did not share life with her, socially or sexually. She concurring, he arranged to have her vacationing or visiting away from home for the greater part of the year, in Florida, and/or the Catskills. The children were placed in boarding schools. He had never wanted and never thought of legally separating from, or divorcing his wife. He was indeed fond of her—in his own way.

The patient was sexually active, mainly with costly call girls, and casual women. His business required him to travel frequently and widely. His excursions were enlivened with many and bizarre sexual adventures. But these were more in the nature of an exercise than of an orgiastic indulgence. In telling of his sexual ventures he always spoke as if he had been "external to the experience."

But once something extraordinary happened to him—a woman fell in love with him, and she refused to be put off, or to accept the role of a casual partner. The woman was married and the mother of two children. Her devotion to the patient knew no bounds. She pursued him constantly and responded to his every beck and call. She asked nothing of him but his love.

At first he was emotionally unresponsive, aloof, and casual. He relished her sexually but wanted no involvement. In time, however, the woman prevailed, at least to the extent of engaging him emotionally more than any other woman had ever done before. He even suspected that he was beginning to love her. But the more his affections became involved, the more his suspicions grew. Did she really love him? Was it for the love of him that she was sacrificing her husband (who was in fact a shady character with a criminal record), and her two children? Or, was she just a "bum," and after something other than his love. She had "carried on" with him for 18 months, and during that time had not asked him for any money. That puzzled him greatly, and fed his suspicions copiously. He queried her on every score, and though she offered him infinite reassurance and a thousand proofs of her love, he remained unconvinced and suspicious. He was, to quote him, "tortured, nervous, tense."

And this is the way he set about to gain relief! He enlisted the cooperation of his most intimate gambling crony, and with him conspired to put the woman, his love, to a test. The patient was to leave the city for a week, and during this time the friend was to try and "make" the woman. As it was agreed, so was it done! And then came the

Nemesis. The patient returning, his friend reported that though he had tried his very best, employing his every stratagem and resource, he could get nowhere with the woman. She was, he assured the patient, steadfast in her loyalty, and committed in her love.

But, as I am sure you can anticipate, this did anything but reassure the patient. It only enlarged the range of his suspicions, for now he not only doubted the love of the woman but also the fidelity and truthfulness of his friend.

It was all too much for him, and he came back for help. Under the circumstances therapy could only be supportive with a minimum of uncovering and insight. Yet in the end he managed to regain his singular balance. This is the pattern he followed. He gave up his "love," and simultaneously regained his friend.

The unconscious homosexual component in this constellation is, of course, self-evident. But more interesting and significant is what happened with his compulsion to gamble. He had abandoned gambling during the 18 months of his involvement, and resumed it when "the love" was discarded. He now gambled recklessly and lost a good deal of money. His game of preference was gin rummy. Now he played dice and bet on horses. He resumed his sexual contacts with call girls and casuals. He made an abortive attempt to "get closer" with his wife. Nothing came of it. And yet, he found living more tolerable. He returned to the old and endless pursuit of Lady Luck, who never answers but only smiles the enigmatic smile of the Sphinx.

During therapy he reported an interesting dream. "He was walking somewhere in Chicago. A man and a woman tried to hold him up. They took everything from him. He ran to find the cops. Then ran further and finally gave up."

This slice of life, treated as a psychiatric biopsy, confirms, I believe, this much, that the neurotic gambler always plays to lose, that in his gambling he is obsessively teasing his surrogate figure Lady Luck for a show of favor, yet cannot and will not accept "Yes" for an answer. Such an answer does not square with the deeper facts of his life, nor with the unconscious memories of his irremediable deprivations. And in some ways I am persuaded the gambler is right; for who can make up, and what can cancel out, the egregious loss of the mother's assuring love and the father's supportive sanction. Such a one is doomed to wander through life asking unanswerable questions.

More pointedly, the Gambler and His Love are an unrealistic pair. Only the gambler is real. The gambler has no love. He is incapable of love. Gambling is the gambler's addiction, not his love. For love has the requisite of an antecedent ego maturation—to which the gambler has not attained. He is in these respects severely retarded, a victim of his deprivational experiences.

A CASE REPORT OF GASOLINE SNIFFING

ROBERT V. EDWARDS, M.D.[1]

Recently, a 17-year-old boy was encountered who had been sniffing gasoline vapors since age 6.

At age 6, while helping to siphon gasoline from one tractor to another, John discovered inhalation of gasoline vapors was pleasurable. His mother reported he had been observed at least once a month to inhale and exhale gasoline vapors while pressing his mouth over a gasoline tank. John began smoking cigarettes at age 6. From age 6 to 9, he was anemic and complained of pains in his arms and legs. During that 4-year period, he received "blood medicine" from his physician, who was not informed about the gasoline sniffing. John repeated two grades in grade school. He left school for economic reasons at age 16. From age 14 to 16½, John also drank alcohol excessively. He stated he had been sniffing

[1] Northwestern Mental Health Center, Crookston, Minn.

gasoline 3 or 4 times a year in recent years. He would sniff gasoline every 3 or 4 hours over a 48-hour period : inhalation would last 3 to 5 minutes. John claimed that gasoline sniffing greatly stimulated him and enabled him to think very clearly. He would then feel that he could do anything. On many occasions he sniffed too vigorously and lost consciousness.

John's mother perceived him as possessing a very superior intellect. It was her conviction that her son was destined for greatness. John had the same self-concept. He rationalized that he had not as yet achieved greatness because of adverse events such as the necessity of discontinuing his education. He was an extremely helpful son and would work long hours all day and far into the night attempting to help mother, father, and even the carpenters when they built the barn. John revealed that his father had always worked too hard and never seemed to be interested in his family. He reported : "Mother worries about everything. She always believes some terrible accident is going to happen to members of our family." John believed mother had affected him as he also worried about accidents. His mother had worried about her son's sniffing gasoline whereas the father reportedly regarded the problem as unimportant. John recently changed many of his bad ways because of his fiancee's influence. She made him give up drinking and insisted that he seek psychiatric help for gasoline sniffing. He had been working on a farm where he had been repeatedly observed sniffing gasoline. His employer considered John insane and discharged him. His fiancee refused to consider marriage unless he straightened himself out. For this reason, John consulted a physician about his gasoline sniffing.

During the two hours of interviewing there was no evidence of an organic mental syndrome. The patient's Minnesota Multiphasic Personality Inventory was a 9'05-21 profile which would be typical of people usually classified as hypomanic or manic. The Gorham's Proverbs Test indicated 19 abstract and 2 concrete responses. On the Sentence Completion Test John revealed he was suffering from considerable anxiety. Before hospitalization could be arranged, John struck a train with his car while traveling around a blind curve. John and his mother were killed.

Dynamically, it appears that John had a lifelong manic hyperactivity designed to achieve greatness as expected by his mother. Because of his powerful need to achieve more than was possible, one might speculate that the patient did experience a subjective increase in efficiency when sniffing gasoline. Clinger and Johnson(1) reported gasoline sniffing in a 16-year-old Negro boy, regarded as schizophrenic, and a 13-year-old white boy who exhibited depression and anxiety. Faucett and Jensen (2) reported a case of gasoline sniffing in an 11-year-old boy. There was no clinical or laboratory evidence in the 3 cases of lead poisoning or liver disease. The 11-year-old boy had an abnormal EEG. All three reported experiencing hallucinations while sniffing gasoline. The 13-year-old boy reported feelings of omnipotence and omniscience while sniffing gasoline. He would then feel that he had unlimited power with the ability to travel great distances and survey the whole world. The 11-year-old boy utilized his hallucinatory experiences while sniffing gasoline to plot the removal of his "bad father". It is of interest that this boy also had smoked a pack of cigarettes daily since age 5 and also lived in an isolated farming community. Pruitt(3) reported a 6-year-old child who was brought to his office inebriated and unable to stand. The mother reported that her child had been addicted to sniffing gasoline for 18 months. No other details were given. The 3 previously reported cases discontinued gasoline sniffing when the underlying emotional conflicts were treated and improved.

Summary

In comparing the 4 cases, it is apparent that gasoline sniffing over a prolonged period need not necessarily produce serious organic damage. Pleasant hallucinations appear to be a reward for sniffing gasoline. In two cases, a feeling of omnipotence and omniscience was clearly reported to be an important effect of gasoline sniffing. Gasoline sniffing may tend to occur in a child with the psychodynamics of a manic.

BIBLIOGRAPHY

1. Clinger, O. W., and Johnson, N. A. : Psychiatric Quart., 25 : 557, Oct. 1951.

2. Faucett, R. L., and Jensen, R. A. : J. Pediatrics, 41 : 364, Sept. 1952.

3. Pruitt, M. : J.A.M.A., 171 : 2355, Dec. 26, 1959.

PROLONGED PHENOTHIAZINE HEPATITIS : REPORT OF A CASE

BRUCE H. BAILEY, CAPT., (M.C.), USA, AND
ROBERT E. KAY, CAPT., (M.C.), USA [1]

Since 1955 a number of reports(1-3) have discussed the syndrome of chlorpromazine hepatitis. A gastroenteritis, occurring within 2 to 60 days, usually precedes the development of clinically evident jaundice. The incidence of this complication has varied from 0.5 to 4% and the total dose preceding the onset of this reaction has been as little as 150 mg. Hepatitis has occurred as late as two weeks following discontinuation of the drug. It is not known whether this is an allergic or hepatotoxic manifestation. The majority of cases have evidenced clinical and/or chemical changes indicating intrahepatic obstructive jaundice persisting from one week to 3 months. Cases lasting more than 6 months have been very infrequent. Gebhart, *et al.*(2) mentioned two patients who had abnormalities persisting for 10 months (laboratory findings not reported). The following case, typical of a chlorpromazine hepatitis, emphasizes the persistence of chemical abnormalities despite clinical improvement and reports results of laboratory tests over an 11 month period.

This 23-year-old white, single, male college graduate was hospitalized at another hospital on March 31, 1959, because of paranoid schizophrenia. There was a history of adverse reactions to drugs. Chlorpromazine, 50 mg. q.i.d., was started on the day of admission, increased to 100 mg. q.i.d. on April 2, and continued through April 11, when he was transferred to Walter Reed General Hospital. Trifluoperazine, 10 mg. q.i.d., was begun on that date and continued for 3 days. On April 15, the patient vomited, was lethargic and anorectic, his urine was dark, and scleral icterus was noted. Liver function studies were done at regular intervals. The most significant variations are noted in Table 1. Additional data revealed normal total proteins, thymol turbidity, cephalin flocculation, blood urea nitrogen, non-protein nitrogen, fasting blood sugar, and prothrombin time. The white blood count on April 16, was 6500 with 36% neutrophils, 48% lymphocytes, 11% eosinophils and 5% monocytes. Repeat white cell counts showed no elevation and normal differential without eosinophilia. Weight loss was prominent in the early months of hospitalization but was enhanced by severe psychotic symptomatology. The patient remained afebrile throughout. Pruritus, of varying degree, heralded initially by a transient, finely papular erythematous rash, occurred intermittently from July through September. His hospital course was characterized by minimal improvement in mental status despite 37 ECT treatments. Other medication given for brief periods during May through August were : probanthine, Benadryl, phenobarbital, Ritalin, meprobamate, amobarbital, atropine, and Anectine. None of these appear to have affected the course of his jaundice. Prochlorperazine (one 30 mg. "spansule") was given on May 4, 1959.

It is not known whether the use of two phenothiazine derivatives played any part in the prolongation of the patient's hepatic disease. Nevertheless, except for the duration, this case is quite typical of a chlorpromazine-induced intrahepatic obstructive jaundice. Of particular interest is the persistent marked elevation of alkaline phosphatase over the course of 11 months accompanying a steadily diminishing serum bilirubin. It would seem reasonable to suppose that this abnormality may persist for one to two years in this case. Although the absence of necrosis is characteristic, the elevation of the serum glutamic-oxaloacetic

[1] Department of Neuropsychiatry, Walter Reed General Hospital, WRAMC, Washington 12, D. C.

[2] This material has been reviewed by the Office of the Surgeon General, Department of the Army, and there is no objection to its presentation and/or publication. This review does not imply any indorsement of the opinions advanced or any recommendation of such products as may be named.

TABLE 1

ABNORMALITIES IN LIVER FUNCTION IN A CASE OF PHENOTHIAZINE HEPATITIS

	17 April	*5 May*	*22 May*	*3 June*	*24 June*	*20 July*	*17 Sept.*	*23 Oct.*	*17 Nov.*	*23 Feb.*
Alkaline Phosphatase SJRU **	5.2	24.8	33.1	23.7	13.4	31.2	46.4	53.1	56.5	39.4*
Total mg.% Bilirubin	5.4	16.2	12.3	11.4	11.3	8.6	4.6	2.6	——	1.1
Direct mg.% Bilirubin	1.8	11.6	8.3	7.4	6.2	5.0	2.8	1.6	——	0.5
Transaminase Units	107	311	104	——	81	——	132	——	325	——

* 39.4 King-Armstrong Units.
** Shinowara-Jones-Reinhart Units.

transaminase makes likely the presence of some hepatic cellular damage. It is expected that follow-up studies will be reported.

BIBLIOGRAPHY

1. Benitez, R. E., *et al.* : U. S. Armed Forces M. J., **8** : 365, 1957.

2. Gebhart, W. F., *et al.* : Arch. Int. Med., **101** : 1085, 1958.

3. Werther, J. L., and Korelitz, B. I. : Am. J. Med., **22** : 351, 1957.

COMMENTS

INTROSPECTION

The Greeks said "Know Thyself." This is a dictum acceptable only with qualification. There is another saying to the effect that the ultimate of knowledge is to know that one knows nothing, despite the fact (begging the question in using the word "fact") that the statement is self-contradictory. However, the word "agnostic" is in a general way useful in more than one practical application.

But to come back to knowledge of self. Commonly two aspects of the person are spoken of—the narrowly physical part, the machine; and the part that has to do mainly with consciousness, and variously referred to as the psyche, mind, entelechy, soul or spirit. This latter, with a bow to Hegel, may be thought of as a sort of upper chamber or attic of the mind. However, it seems reasonable to consider the physical aspect of self before venturing into the arcana of the psychological self as such.

There will probably be general agreement that the common rules of hygiene—cleanliness, temperance in all things, a sense of discipline—should be taught to children and observed by adults. How much farther should self-knowledge and self-ordering of the machine go?

The gastrointestinal canal has been called the *primae viae*, and with good reason; and it may be safe to say that more persons are morbidly concerned with what goes on in this main highway from oral cavity to cloacal orifice than with any other feature of the physical economy. One example of this concern is the socalled anorexia nervosa. I remember one patient with this disorder who by fasting had reduced herself to skin and bones and finally could take only water, and in the smallest spaced sips. At this point she became an emergency hospital case. Self-imposed avoidance, for assumed health reasons, of the greatest variety of foods is a common phenomenon. Somewhat less frequent are those persons who worry about one or more of their other organic systems. Occasionally, unhappily, such a fixed concern may be of iatrogenic origin.

The point is that the human body is a marvellous chemical laboratory and a wonderful machine. It is self-regulating, and beyond giving it ordinary decent care, even sometimes without such care, it will run itself quite well without any help from what we laughingly speak of as our ego. In fact when the ego begins to interfere, things are likely to run badly and in the direction of hypochondriasis. These matters are so elementary as hardly to deserve mention, except for the circumstance that it is just such kindergarten rules that the doctor may have to try to teach certain of his patients.

The average person cannot simply by taking thought alter his pulse rate, nor can he regulate the exchange of gases in his lungs or tell the kidneys what to retain and what to eliminate. And as for food, good digestion is more likely to wait on appetite and health on both if the intake is forgotten once it has pleased the palate and passed on its journey downward. In all these matters the body knows how. Leave it alone to do its own work.

If, therefore, it is good advice to the patient worried about his physiology not to try to scrutinize the processes that go on inside his skin, how about the one who is too introspective as to his psychological processes? Here the situation may appear to be somewhat different, but is it essentially? The mental operations of the average person will be molded by the culture of which he is a part. He will develop habits, assume attitudes, form prejudices, acquire beliefs; and all this may be more or less automatic. Indeed, judging by the stereotypes in speech that bulk so large in every-day verbal exchanges, one might say that what we call mental reactions might almost as well be called reflexes. Anything that seriously disturbs this routine flow of events and these automatic responses may predispose to morbid symptoms.

This is where introspection may become unhealthy. Mental tests are valuable within

limits and the patient must of course be encouraged to tell his story. But having told it once it may be a part of his illness to tell it again and again. This pathological introspection may reach the point where the patient appears to have little or no other content of consciousness beside the dreadful state of his own inner self. His "organ recital" tends to become self-perpetuating.

This admittedly, is an extreme situation and difficult to combat, but it illustrates one terminus of the introspective track. It should not take the qualified physician, psychiatrist or other, long to determine how to deal with the factor of introspection in the examination and treatment of each patient; and in listening to his story or his complaints he will try to judge the relative importance of the various matters brought forth and to share his judgment with the patient, if the latter is prepared to receive it. It is common experience that it may be a great relief to the patient to hear the considered judgment of the doctor that some item in his history, over which he has worried and brooded, can be dismissed as negligible, that he can be encouraged to forget it. Forgetting has its place in normal life as well as remembering, and blessed oftentimes is he who is able to forget, and whose trouble can stay forgot.

In psychotherapy this business of introspection is not always given the discriminating attention it requires. It so easily passes over from the salutary "know thyself" of the Greeks to morbid concern about old, unpleasant things perhaps long since consigned to oblivion. For it is in the nature of the depressive mood to dig up unhappy things for vivid recollection and overweighting just as an elevated affect dwells on pleasant memories in keeping with its own euphoria.

It boils down to this: How much introspection is normal, that is, wholesome for the given individual? In how far should the doctor encourage more or less introspection, bearing in mind that for a great many patients self-probing and memory-delving is just about the worst medicine they can take. Indeed morbid introspections is itself a mental disorder. And just as the physical machine works better if one doesn't try to run it consciously, so the psychic machine is likely to run better if not interferred with through morbid self-consciousness.

The ultimate of this kind of self-torture through pathological introspection is vividly set forth in the first part of Dostoevsky's "Notes from Underground"; and the physician practicing psychotherapy might profitably review this story now and then.

"ON WHOSE SHOULDERS . . ."

No group should ever neglect to honor the work of forbears, upon which their own contributions are based. This is particularly true in medicine. Great is the loss to anyone who neglects to study the lives of those whom he follows.

—HOWARD A. KELLY

CORRESPONDENCE

URINARY TESTS FOR PIPERAZINE-LINKED PHENOTHIAZINES AND FOR CHLORPROMAZINE

Editor, THE AMERICAN JOURNAL OF PSYCHIATRY:

SIR: Experience in these laboratories has demonstrated that, although the test for Thorazine and its metabolites in urine, as described by Forrest, Forrest, and Mason (1), is quite satisfactory, the test for the piperazine-linked phenothiazines(2) is not. The latter is complicated by a very high rate of false positive reactions as well as by the relative instability of the reagent.

When the piperazine-linked phenothiazine test was carried out on the urine of 26 of the laboratory and office personnel, 10 false positive reactions were obtained. The following was the distribution of color intensities as determined from the chart: Three, trace; two, 1+; two, 2+; two, 2½+; one, 3½+. When the test was applied to the urine of 19 patients who had not been prescribed a phenothiazine drug for at least 6 months, 12 of the 19 gave positive reactions with the following distribution of intensities: Three, trace; four, 1+; three, 1½+; one, 2+; one, 2½+. Duplicate analyses ruled out the possibility of contaminated glassware. Finally, tests on the morning urines of 4 out of 5 patients receiving placebos of lactose as part of a closely supervised double blind study consistently yielded positive reactions, with few exceptions, over a period of 3 months. The intensities of colors were in the range of trace to 3+ and were still obtained for a period of at least one week after discontinuation of the placebo. The fifth patient gave 10 positive reactions out of a total of 77. A spot check of the patients' capsules, on one occasion, showed that the patients were indeed receiving placebos. The number of these false positive reactions are far in excess of the 2% level reported(2). Heyman, *et al.*(3), using the urine of geriatric patients, have recently reported a rate of 15% false positive reactions with this and two other similar tests. The above results were obtained using urine from young and middle-aged adults.

The false positive reactions were not related to bile in the urine as determined by the Gmelin or Huppert tests for bile pigments, to administration of any one drug, or to sex or race. Neither were they due, as stated above, to the possible excretion of phenothiazine from previous administration, nor to the administration of the wrong capsules in the case of the double blind study.

Regarding the reagent, a good dry preparation of $Hg(NO_3)_2$ works best. If it becomes too wet, no reaction is obtained. Since $Hg(NO_3)_2$ in extremely hygroscopic, excessive care must be taken in opening and closing the bottle for weighing out of samples. A preparation of the reagent was found to be satisfactory for a period of two months and then was found to decay within a period of a week. The reagent is colorless when first prepared and turns yellow in approximately one hour. This color change, however, does not seem to affect its use.

Contrary to these findings, the test for Thorazine appears to be quite satisfactory. No false positive reactions were noted in 35 tests comprising the urines of 19 of the laboratory personnel and 16 patients. While assaying the daily urines of 8 patients initially receiving 800 mg. of Thorazine per day, it was found that, as the dose was reduced to 600 mg., 400 mg., and 200 mg., at two-week intervals, the color obtained in the test correlated well with the dose administered. All urines were negative 6 to 8 days after discontinuation of the drug. In more than 2000 routine tests, the general impression has been that there is good correlation between color obtained and dose of drug administered. No difficulty was en-

countered regarding the stability of this reagent.

Pollack(4) has also previously confirmed the usefulness and validity of the Thorazine test.

Herbert S. Posner, Ph.D.,
James D. Solomon, M.D., Ph.D.,
Saint Elizabeths Hospital,
Washington, D. C.

BIBLIOGRAPHY

1. Forrest, F. M., Forrest, I. S., and Mason, A. S. : Am. J. Psychiat., 114 : 931, 1958.
2. Forrest, F. M., Forrest, I. S., and Mason, A. S. : Am. J. Psychiat., 116 : 549, 1959.
3. Heyman, J. J., Bayne, B., and Merlis, S. : Am. J. Psychiat., 116 : 1108, 1960.
4. Pollack, B. : Am. J. Psychiat., 115 : 77, 1958.

REPLY TO THE FOREGOING

Editor, THE AMERICAN JOURNAL OF PSYCHIATRY :

SIR : Referring to the observations of Drs. Posner and Solomon, we are aware of the occurrence of additional "false positives." Since these are caused by both endogenous and exogenous factors, their incidence will vary with the type of hospital population and controls used. Our statistical data for 5 tests for urinary phenothiazine compounds(1) were compiled on the basis of the hospital patients in a neuro-psychiatric Veterans Hospital, the vast majority of whom are in the 20 to 50 year age bracket, with hospital personnel and patients not on phenothiazine medication serving as controls. Further tests conducted by us on different hospital populations (general medical, tubercular, phenylketonuric) have yielded additional "false positives" and these supplementary data have been reported by us(6-8). They refer to the following tests :

1. Rapid urine color test for chlorpromazine (Thorazine), promazine (Sparine) and mepazine (Pacatal)(1).
2. Rapid urine color test for triflupromazine (Vesprin)(2).
3. Rapid urine color test for piperazine-linked phenothiazine drugs(3).[1]
4. Rapid urine color test for the detection of small amounts of phenothiazine compounds (FPN, General Test)(4).
5. Rapid urine color test for thioridazine (Mellaril)(5). Additional "false positives" observed pertain mainly to tests 2 and 3 which are extremely sensitive and suitable for the demonstration of traces (fractions of a gamma) of phenothiazine compound per ml. of urine. The high degree of sensitivity is obtained at the expense of a higher rate of "false positives," some of which have been identified as follows :

A. Urines from patients on daily medication of 6 g or more of para-aminosalicylic acid showed "false positives" ranging from the trace to ++ levels in tests 1, 4 and 5, and from the + to +++ levels in tests 2 and 3. See also(3) and(5).

B. Urines obtained from phenylketonuric patients showed "false positives" with tests 2 to 5, ranging from the trace to ++++ levels, the latter having been obtained with test 3 in a urine showing 80 to 100 mg. of phenylpyruvic acid according to the phenistix test. See also(5).

C. Urines from persons with impaired liver function—acute or chronic—, with and without showing abnormal urinary bile content, may show "false positives" of intensity trace to + with tests 2, 3 and 4 (2, 3, 4, 5).

D. Urines of patients on therapy with high doses of natural conjugated or synthetic estrogens have shown occasional "false positives" of trace to + levels with tests 2, 3 and 4.

E. Some, in our experience, infrequent but consistent "false positives," not attributable to any factor under A to D were found in control urines of persons without any medication. In the absence of exact knowledge it is assumed that so far unidentified biochemical agents (possibly steroids, ketones, phenolic, indolic or hydroxylated pyridine derivatives) may account for these unexplained "false positives." This hypothesis is advanced on the basis of color reactions obtained *in vitro* with relatively

[1] Test used by Drs. Posner and Solomon.

high concentrations of these compounds.

Regarding the stability of solutions of uranyl nitrate and mercuric nitrate in concentrated hydrochloric acid (test solutions 2 and 3), the pertaining data were mentioned in the original publications, and, in laboratories with controlled humidity, these test solutions remain operative for 6 months and longer, if carefully stored and handled.

It should also be re-emphasized that all evaluation of colors should be performed strictly as specified, *i.e.* within 20 seconds for test 4, and, within 30 seconds for tests 2 and 3. All subsequently appearing color or unspecific darkening of urines should be disregarded.

We are unable to offer any other helpful comment with regard to the high incidence of "false positives" in the test series on 51 individuals conducted by Drs. Posner and Solomon. In our own extended series of controlled tests, excluding phenylketonurics and patients on para-aminosalicylic acid, we found our "false positives" to approximate 5% for test No. 2, 3, 4 which is well below the figure of Heyman's(9) series (done on geriatric patients) and far below Posner's.

In spite of the occurrence of "false positives," the tests constitute valuable diagnostic tools, in clinical psychiatry if properly evaluated and interpreted in the light of the above, especially since we have not seen any "false negative" tests in any of the 5 different procedures mentioned above. In this connection it should be kept in mind that extreme urine dilutions after excessive fluid intake may give rise to very inadequate color reactions.

In all cases of apparent "false negatives" the tests should be repeated on another urine specimen, to be obtained 1 to 3 hours after carefully supervised administration of drugs, preferably in form of liquid concentrates.

Fred M. Forrest, M.D.,
Irene S. Forrest, Ph.D.,
Aaron S. Mason, M.D.,
V.A. Hospital,
Brockton, Mass.

BIBLIOGRAPHY

1. Am. J. Psychiat., **113** : 931, 1957 ; **114** : 931, 1958.
2. Am. J. Psychiat., **115** : 1114, 1959.
3. Am. J. Psychiat., **116** : 549, 1959.
4. Clinical Chemistry, **6** : 11, 1960.
5. Am. J. Psychiat., **116** : 928, 1960.
6. Clinical Chemistry, in press. To appear Aug. 1960.
7. Psychopharmacology Service Center Bulletin (to be published August or September 1960).
8. Memorandum distributed at Exhibit of Brockton VA Hospital at APA Convention, Atlantic City, May 1960.
9. Heyman, J. J., Bayne, B., and Merlis, S. : Am. J. Psychiat., **116** : 1108, 1960.

FRANKL'S LOGOTHERAPY

Editor, THE AMERICAN JOURNAL OF PSYCHIATRY :

SIR : In your August issue Hans A. Illing, Ph.D., reviewed Victor E. Frankl's book : *Das Menschenbild der Seelenheilkunde.* This review is not critical but slighting. Frankl in his book does not "deal with a multitude of topics," he discusses one topic, namely the image of man in different kinds of psychotherapy.

Frankl pays due respect to the genius of Freud but he does not treat psychoanalysis as a dogmatic religion and he agrees with Ludwig Zeise whom he quotes : ". . . the concept of depth (in psychoanalysis) is one-sided and incomplete."

It seems to me unfair to Frankl and to the readers of your *Journal* when the reviewer distorts the sense of the author's writing by taking a few words out of the context and quoting them. Frankl does not say that "the mass neuroses of mankind cannot be resolved." He says that the pathology of the spirit of the age, the collective neurosis of mankind, cannot be overcome "without an appeal to (man's) freedom and responsibility." These are basic concepts in Frankl's Logotherapy which the reviewer has completely overlooked.

G. Kaczanowski, M.D.,
Ontario Hospital,
Whitby, Ont.

REPLY TO THE FOREGOING

Editor, THE AMERICAN JOURNAL OF PSYCHIATRY :

SIR : In reply to the foregoing, Dr. Kaczanowski probably raises the important question, whether a report on any book should be critical and deal extensively with the content or should, if this is not possible for reasons of space, not be dealt with at all.

My reports ("New German Psychiatrica and Psychologica," the third installment of which appeared in the August issue of the *A.P.A. Journal*) are notices of German books, and not reviews in the customary sense. They are rarely critical and hardly ever "slighting," as Dr. Kaczanowski *interprets* my report to be ; a book, which in my opinion has little value, will not be selected for a report in the first place.

I have had much personal correspondence with Dr. Victor E. Frankl, and admire him greatly ; hence my inclusion of his book in my reports. I maintain that, while "logotherapy" is his primary brain-child, there is, and should be, a "multitude of topics" in his book. When I quote Frankl (in a report consisting of but two sentences !) as being not in agreement in Freud's *Lehre,* Dr. Kaczanowski in *his* way says the same. My translation of a passage in Dr. Frankl's book seems to me ***substantially*** similar to that of your reader. Above and beyond this, translators are known to differ in their translations. Lastly, the opinion of the reviewer or "reporter" is his own, to which he is entitled.

Hans A. Illing, Ph.D.,
Los Angeles, Calif.

A CASE FOR JEFFERSON [1]

Harrison loves his country too,
But wants it all made over new,
He's Freudian Viennese by night,
By day he's Marxian Muscovite.
It isn't because he's Russian Jew.
He's Puritan Yankee through and through.
He dotes on Saturday pork and beans—
But his mind is hardly out of his teens—
With him the love of country means
Blowing it all to smithereens
And having it all made over new.

—ROBERT FROST

[1] From STEEPLE BUSH By *Robert Frost,* Copyright 1947, By Henry Holt & Co., Inc. By Permission of Holt, Rinehart & Winston, Inc.

NEWS AND NOTES

The Israel S. Wechsler Lecture.—Dr. Macdonald Critchley, F.R.C.P., Senior Physician of the National Hospital for Nervous Diseases, Queen Square, London, and Neurologist for Kings College Hospital, London, England, will deliver the Sixth Annual Israel S. Wechsler Lecture on December 9, 1960 at 8:30 p.m. in the Blumenthal Auditorium of the Mount Sinai Hospital, New York City. Dr. Critchley's lecture is entitled: "The Nature of Animal Communication and its Relation to Language in Man."

The Hofheimer Prize.—This prize of $1,500 is awarded annually by The American Psychiatric Association for an outstanding research contribution in the field of psychiatry or mental health which has been published within a 3-year period up to the date of the award. Studies in press or in preparation are not eligible for this award.

This competition is open to citizens of the United States and Canada who were not over 40 years of age at the time the study was submitted for publication; or to a research group whose median age does not exceed 40 years. The next award will be made at the annual meeting of the Association in May 1961. Entries submitted to the Prize Board before March 1, 1961, will be considered. It is imperative that 8 reprints or duplicated copies of each entry as well as the necessary data concerning age and citizenship be sent to David A. Hamburg, M.D., Chairman, Hofheimer Prize Board, National Institute of Mental Health, Bethesda 14, Md. All entries are independently evaluated by each member of the Hofheimer Prize Committee and final selection determined by equal vote.

University of California Symposium on "Control of the Mind."—This symposium will be held Jan. 28 to 30, 1961 in San Francisco. The topic will be discussed from many viewpoints: "the physiological and biochemical, the psychologic, sociologic and historical, and from the point of view of religion, mass communication, and political philosophy." A considerable number of well known writers and scientists will participate.

The office of Public Information of the University announces this as "an unprecedented symposium"; it unquestionably will be. For further information write to the Department of Continuing Education in Medicine, University of California Medical Center, San Francisco 22, California.

Research Training in Psychiatry.—The Graduate Educational Program of the State University of New York Downstate Medical Centre offers a 2-year program of research training in psychiatry leading to the degree of Doctor of Medical Science. The course is open to M.D.'s who have completed 3 years of residency training in psychiatry. Candidates will also be accepted after 2 years of residency, in which case, the final year of residency will be taken at the psychiatric division of Kings County Hospital, concurrently with this program, making a total of 3 years for the combined program. It provides an opportunity to do research and offers courses in research methods in psychiatry. A broad interdisciplinary faculty conducts the teaching and supervises research of candidates.

Each candidate accepted will be granted a fellowship of $7,500 for the first post-residency year and $8,000 for the second year. Three-year candidates will, in addition, receive $7,100 for the final residency year.

Applications for the academic year beginning September 1961 should be submitted before February 1, 1961. For information write to: Office of Admissions, Downstate Medical Centre, 450 Clarkson Ave., Brooklyn 3, New York.

The Joint Meeting of the Japanese Association of Correctional Medicine and the Medical Correctional Association of America.—This meeting was held in Tokyo on September 20 and 21, 1960 on The Problem of Stress in Correctional Institutions.

About 20 American delegates were present, and prior to the meeting they were conducted through various correctional institutions in Tokyo and vicinity. Among these were: the Tokyo Juvenile Detention and Classification Home, the Fucu Prison, the Tokyo Women's Guidance Home and the Hachiojo Medical Prison.

In the course of the exceptionally fine program many research papers were read to an audience of 450 to 500, consisting mainly of psychiatrists and other medical specialists, psychologists, social workers, members of the staff of the Ministry of Justice and other correctional personnel of professional standing.

American speakers included Dr. Winfred Overholser, Superintendent of St. Elizabeths Hospital, Washington, D. C. on "The Role of Psychiatry in Correctional Administration," Dr. James V. Bennett, Director of the Bureau of Prisons, U. S. Department of Justice, on "Psychiatric Problems in Prisons," Dr. Harry R. Lipton, Atlanta, Ga., on "Stress in Correctional Institutions," Dr. Sarah Geiger, Director of the Milwaukee Child Guidance Clinic on "Electroencephalographic Changes in Aggressive Behavior," and Dr. Ralph S. Banay, Secretary of the Medical Correctional Association of America on "Violent Youth."

Japanese speakers included: Tetsizo Kosimo, Minister of Justice; Dr. Nagahide Ishibashi, President of the Japan Medical Association; Dr. Masao Otsu, President of the Japanese Association of Correctional Medicine; Dr. Akira Masaki, President, The Japanese Correctional Association; Dr. Tsuneu Muramatsu, Dean, School of Medicine, Nagoya National University; Prof. Sadao Hirose; Prof. Kokichi Higuchi; Dr. Toru Matsumoto; Dr. Akira Kobayashi; Dr. R. Yamanaka; Dr. Tamio Sase; Dr. Takayuki Tsuboi; Messrs. Yoshitsugu Baba, Vice-Minister of Justice; En. Ohta, Vice Governor of Tokyo; Taka Hashi; Shigeru Nishi; Yoshiyuki Tanaka; Noriyuki Hanakawa; Ryuichi Hirano; Tory Matumoto; Teizo Ichikawa; Bunsaku Nakao; Ichiro Ohsawa and Mrs. Tsuneko Mita, Director of Tokyo Women's Guidance Home.

An outgrowth of the Meeting was the founding of the International Association of Correctional Medicine. The officers elected were Winfred Overholser, M.D., president; Masao Otsu, M.D., vice-president; and Ralph S. Banay, M.D., secretary. It is planned that the new association will meet bi-annually in different countries.

The American delegates were given a warm and cordial welcome and were generously entertained by their hosts. A special concert was given for the group in the Music Room of the Imperial Palace, and they attended a performance at the Kabuki Theater, where they were introduced to the actors. They were escorted through the Summer Villa of the Emperor and visited many fine shrines, temples and historical buildings. One of the most interesting of these was Shosoin in Nara, situated in a garden closed to the general public, where priceless Imperial treasures are housed. Once a year the Emperor, who is said to possess the only key, opens the house to inspect these treasures. Another highlight was the visit to the Sacred Stables of the Toshugo Shrine in Nikko to see the originals of the famous three monkeys "Hear no Evil," "Speak no Evil" and "See no Evil." Another famous sculpture there is a cat which seems to be sleeping but which, according to the legend, is protectively watching over the inner sanctum.

This fine opportunity for scientific and social exchange between two similar groups and the kind of hospitality extended to the American delegates are a symbol of the increasing friendship between the two countries.

THE AMERICAN ASSOCIATION FOR THE STUDY OF HEADACHE.—This association was organized this Summer at the time of the Annual A.M.A. meeting in Miami. The following officers were elected: President, Henry D. Ogden, New Orleans, La.; Vice-President, Walter C. Alvarez, Chicago, Ill.; Treasurer, Robert E. Ryan, St. Louis, Mo.; Secretary, Bayard T. Horton, Rochester, Minn.; Moderator, George T. Waldbott, Detroit, Mich.

The Association welcomes to its membership any physician who is interested in the study of headache. Further information can be obtained from the Secretary at the Mayo Clinic, Rochester, Minn.

GUEST LECTURE SERIES IN PHILADELPHIA.—Dr. Philip Mechanick, Acting Medical Director of Philadelphia Psychiatric Hospital, announces the second annual series of guest lectures for residents: Maurice E. Linden, M.D., Geriatric Psychiatry; Charles Brenner, M.D., Denial; Kenneth E. Appel, M.D., Psychotherapy; John Donadeo, M.D., Symbolism; Jacob A. Arlow, M.D., Ego; Kenneth T. Calder, M.D., Affects as Signals; Bertram D. Lewin, M.D., Dreams; Bernard Bandler, M.D., and Dexter M. Bullard, M.D., topics to be announced.

The program is under the direction of Dr. Morris W. Brody, Director of Resident Training.

FIRST INTERNATIONAL CONGRESS OF ENDOCRINOLOGY.—The proceedings of this congress held in Copenhagen in July 1960 have been published in 2 supplements to *Acta Endocrinologica* accompanying volumes 34 and 35.

The first supplement contains abstracts of the symposium lectures and round table discussions with translations into interlingua and edited by Christian Hamburger. This supplement runs to 426 pages.

The second supplement contains abstracts of short communications and is edited by Fritz Fuchs. This supplement, exclusive of indices, runs to 1,358 pages.

These volumes are published by Periodica in Copenhagen, 1960.

FRENCH GOVERNMENT.—M. Raymond Triboulet, French Minister of Veteran's Affairs and member of the Cabinet of France on a goodwill visit to the United States tendered a reception for the Veterans Committee of the People to People program at the French Consulate in New York City, October 22, 1960. M. Triboulet presented to Dr. Winston E. Burdine, prominent Atlanta psychiatrist and past National Commander of the AMVETS, the Croix De Merite, Combatant Military Medal for his outstanding work on the People to People program. This decoration is one of the highest and most coveted of the government of France and is an expression of their goodwill and appreciation of Dr. Burdine's dedicated efforts on behalf of the Worlds Veterans Federation and his creation of better understanding between the different peoples of the world during his visits to the U.S.S.R., France, and the major countries of the world.

INTRODUCTION TO ANALYTICAL PSYCHOLOGY.—University of California Extension announces its second residential workshop on "Introduction to Analytical Psychology for Clinicians."

The Conference will be held June 3-15, 1961, at the Asilomar Conference Grounds, Pacific Grove, California, 6 miles from Carmel and 125 miles from San Francisco.

The prerequisite is a Ph.D. or M.D. degree or equivalent in professional experience, and consent of staff, consisting of Bruno Klopfer, Ph.D., (Coordinator); Rivkan Kluger, Ph.D.; Joseph Henderson, M.D.; and Marvin Spiegelman, Ph.D.

The enrollment fee is $95.00. A limited number of $50.00 tuition scholarships will be available. Information concerning veterans benefits will be supplied on request. For further information write to Department of Social Sciences, University Extension, University of California, Los Angeles 24. The deadline for receiving applications is May 1, 1961.

INTERNATIONAL PSYCHOSOMATIC SEMINARS.—A 3-months world cruise by the American President Lines visiting 20 or more foreign ports and leaving New York in October or November 1962 is planned, providing a sufficient number of qualified persons volunteer their services. The understanding will be to conduct teaching seminars in every port visited. Countries included will be Japan, Okinawa, Taiwan, China, Vietnam, Malaya, Ceylon, India, Pakistan, Egypt, Italy, Spain, France.

Reservations will have to be made well in advance and those interested should communicate with James W. McCartney, M.D., 223 Stewart Ave., Garden City, N. Y.

IN HONOUR OF DR. STANLEY COBB.—On October 14 and 15, 1960 the Massachusetts General Hospital arranged a programme which served the double purpose of dedicating the Stanley Cobb Laboratories for Research in Psychiatry, and the ob-

servance of the 25th anniversary of the Psychiatric Service of the hospital.

After a scientific session during the forenoon of the 14th the Dedicatory Programme began with a luncheon at the Massachusetts General Hospital at which Mr. Phillips Ketcham, President of the Corporation, Massachusetts General Hospital presided and the speaker was Seymour S. Kety, M.D., Research Director, National Institute of Mental Health and Member, Scientific Advisory Committee, Massachusetts General Hospital. The luncheon programme was followed by a tour of the Psychiatric Research Laboratories in the Warren Building, M.G.H.

The Anniversary dinner was held the same evening at the Harvard Club in Boston.

The World Medical Association Elects Officers.—At its 14th General Assembly held in West Berlin, Germany, September 15-22, 1960, The W.M.A. elected the following officers :

President (1960-61) : Dr. Paul Eckel—Germany ; President Elect (1960-61) : Dr. Antonia Moniz Aragão—Brazil.

Members of Council (1960-63) : Dr. J. G. Hunter—Australia, Dr. L. W. Larson—U.S.A., Dr. Antonio Spinelli—Italy, Dr. Hector Rodriguez H.—Chile.

Secretary General (1961) : Dr. Heinz Lord.

The Council elected the following officers (1960-61) : Chairman of Council, Dr. Gunnar Gundersen—U.S.A. ; Vice Chairman of Council, Dr. Felix Worré—Luxembourg.

Executive Editor—*World Medical Journal*, Dr. Stanley S. B. Gilder—U.K. ; Associated Editor, Dr. J. R. Gosset—France.

Fourth Latin American Congress of Mental Health.—This Latin American Congress will be held December 4-10, 1960 in Santiago, Chile.

The central theme of the Congress will be community organization and the programme will comprise several general headings including Mental Hygiene in relation to Public Health, to Education, to Social Disorganization, to Successive Life Periods.

Professor Agustin Tellez is President of the Organization Committee ; Professor Carlos Nassar G. is Secretary General.

Information may be obtained from Mottram P. Torre, M.D., Project Director, 162 E. 78th St., New York 21, N. Y.

National Training Centre for Remotivation.—On October 4 at the APA designated the Philadelphia State Hospital as the National Training Centre for Remotivation. Dr. Robert S. Garber, chairman of the APA's Committee on Remotivation and Dr. John E. Davis, Commissioner of Mental Health for Pennsylvania, commended the work done in Remotivation at the Philadelphia State Hospital and the suitability of this designation.

Dr. Garber pointed out that the Remotivation programme, which is supported by the Smith Kline and French Foundation, has, by being introduced to some 600 nurses and aides in 35 hospitals by the Philadelphia training teams, been carried to approximately 2,200 other psychiatric personnel in about 100 additional hospitals. Dr. Garber particularly cited the work of Dr. Eugene L. Sielke, Superintendent of the Philadelphia State Hospital, and Miss Helen Edgar, director of nurses, for their leadership in the programme.

Other regional training centres have been established at the Central State Hospital, Norman, Okla. ; Western State Hospital, Staunton, Va. ; and the Essex County Overbrook Hospital, Cedar Grove, N. J.

International Congress for Individual Psychology.—The Eighth International Congress for Individual Psychology was held at the Neuro-Psychiatric University Clinic of Vienna from August 28 to September 1, 1960. The main subject considered was : "Social Interest." Professor Dr. Hans Hoff, Honorary Chairman of the Congress, gave the opening address, in which he outlined the influence that Individual Psychology has had upon developments in the field of neuro-psychiatry.

More than 200 participants were registered. The following officers were elected :

President, Alexandra Adler, M.D., New York ; Vice Presidents : Rudolf Dreikurs,

M.D., Chicago; Professor Oscar Spiel, Vienna; Dr. Victor Louis, Zurich, was re-elected General Secretary. The next International Congress will take place in 1963.

Dr. Norman Sloan.—Dr. Sloan died on October 6, 1960 at Doctors Hospital in New York City at the age of 43. He was born in Winnipeg, Canada, and was graduated from the University of Manitoba in 1942. He received a Master of Science Degree in Neurology from McGill University in 1949. Postgraduate training was at the Montreal Neurological Institute and the Columbia Psychoanalytic Clinic in New York. He was a staff psychiatrist and consulting neurologist at the Orangeburg State Hospital in New York from 1949-51, and a Research Fellow at the New York Psychiatric Institute from 1949-54.

In World War II he was a Captain in the Royal Canadian Army Medical Corps. In the past decade he had been active in neurophysiological research and had authored numerous articles in this field.

The Process of Science.—In primitive societies explanation of natural phenomena —including human behaviour—was usually based on an assumption of supernatural forces. The assignment of supernatural causes for natural phenomena stemmed from the imagination of man based on his observations of nature. These pre-scientific ideas are not greatly different from the hypotheses which constitute the first step in scientific research. The difference between science and other processes of intellectual invention is that to scientists an idea is not regarded as a fact or as a truth until it has met rigorous tests of validity.

The scientist calls a raw idea a hypothesis. After the idea has gathered sound supporting evidence it becomes known as a theory. Only after some kind of direct proof has been demonstrated, is the precious label of "fact" bestowed, and even that is tentative. Scientists must always be willing to strip away the credentials of a "fact" if new, conflicting evidence appears.

Science highlights what is true in large part by revealing what is not true, *i.e.*, what has failed the validity checks. The experimental methods of science free man from the confusing maze of conflicting opinion. It is as though the compasses by which man steered his various courses pointed helter-skelter in every way and science provided ways to test compasses.

Orr E. Reynolds, Director,
Office of Science,
Dept. of Defense.

Founder Portrait for Central Office A.P.A.—Dr. Philip C. Rond, Associate Professor of Psychiatry, Ohio State University, Columbus, Ohio presented to the Central Office of the American Psychiatric Association on October 10, 1960, an oil portrait of Dr. William Maclay Awl, one of the 13 Founders of the Association of Superintendents of American Institutions for the Insane, and former superintendent of the State Hospital at Columbus.

This donation is gratefully received and it is hoped that arrangements may be made to place the portrait of Dr. Awl on view at the annual meeting of the A.P.A. in Chicago in May 1961.

DEFINITION

I think it might be well to substitute the term psychological medicine for psychiatry, in order to disidentify this branch of medical practice from the flotsam and jetsam on the psychiatric sea.

—C. Charles Burlingame

BOOK REVIEWS

An Introduction to Child Psychiatry. By *Stella Chess.* (New York : Grune and Stratton, 1959, pp. 254. $5.25.)

This brief but comprehensive survey of child psychiatry was written for newcomers to the field and for individuals who need a ready reference to the psychological problems of children. Using a simple and direct approach, the author outlines methods of evaluating children and their parents, enumerates the specific dynamics of various psychological problems, and reviews the current treatment of these problems.

A sizeable portion of this book is devoted to history-taking and to the problems of diagnosis. Many helpful specific recommendations are presented in this section which will help even the inexperienced therapist to get a more accurate, comprehensive picture of the whole problem of the child with emotional difficulties.

The discussion of the various categories of emotional problems is, perhaps, one of the book's greatest contributions. Avoiding lofty speculations, the author presents understandable formulations of the dynamics of many emotional disorders in a clear, logical fashion. This section is invaluable for individuals who have not had the clinical experience to provide them with working knowledge of the dynamics found in children with problems.

The last section of the book deals with the treatment of children with various problems. No one method of therapy is advocated, but the author objectively reviews the available methods of treatment of a wide range of problems, including organic brain damage, neurosis, and childhood schizophrenia. The issues connected with mental retardation are given adequate consideration.

The author has included a carefully selected bibliography at the end of each chapter. There is a helpful index of subjects.

This book is highly recommended as being just what the title says it is. Not only psychiatrists and pediatricians, but students in the related disciplines will find it very profitable.

Richard J. Bealka, M.D.,
Minneapolis, Minn.

The Biochemistry of Development. By *Jean Brachet.* (New York : Pergamon Press, 1960, pp. 320. $10.00.)

There has been no text on the biochemistry of development for some 10 years. Professor Brachet's volume is therefore to be welcomed on this, as well as upon other grounds, as a most useful summary of the advances which have been made in this field during the last decade—a decade which has witnessed heroic progress in the biochemistry of development. The author's treatment is detailed, and he deals with gametogenesis, spermatogensis, fertilization, cleavage, invertebrate and vertebrate eggs, biochemical interactions between the nucleus and the cytoplasm during morphogenesis, and with the biochemistry of differentiation. There are full chapter bibliographies, and excellent author and subject indexes.

To anyone interested in any way living things increase in complexity, this is an indispensable volume.

Ashley Montagu, Ph.D.,
Princeton, N. J.

Recent Advances in Neuro-Physiological Research. Edited by *D. Ewen Cameron* and *Milton Greenblatt.* (Washington : American Psychiatric Association, 1959, pp. 136. $2.00.)

This paper-bound volume is Number 11 in the APA series of *Psychiatric Research Projects.* It contains the scientific papers and discussions of a Regional Research Conference held November 8-9, 1957, in Montreal under the joint auspices of the Department of Psychiatry, and the American Psychiatric Association's Committee on Research 1957-58. The titles and authors are : "Patterns of Intra-Familial Communication" by Nathan B. Epstein, M.D. and William A. Westley, Ph.D. ; "Issues in a Therapeutic Organization" by Milton Greenblatt, M.D., and Daniel J. Levinson, Ph.D. ; "Types of Memory Dysfunction in Senescense" by V. A. Kral, M.D. ; "The Memory Defect in Bilateral Hippocampal Lesions" by Brenda Milner, Ph.D. ; "'Sleep' Threshold Techniques" by C. Shagass, M.D., and A.B. Kerenyi, M.D.; "The Use of the Electrogastrograph in Problem Identification in Psychoneurotic Patients" by H. S. Morton, M.D., J. F. Davis, M. Eng., M.D., and Z. J. Lipowski, M.D. ; "Activation : A Neuropsychological Dimension" by Robert B. Malmo, Ph.D. ; "Neurolathyrism in the Rhesus Monkey Induced by B, B' Iminodipropionitrile" by Edward M. Gore, Frazer V. Hadley, Richard Tislow, M.D., and Joseph Seifter, M.D. ; "A Biological Basis for Psychopathology" by Howard Liddell, Ph.D.

A.G.

THE RELUCTANT SURGEON. A BIOGRAPHY OF JOHN HUNTER. By *John Kobler*. (Garden City, N. Y. : Doubleday & Co., 1960, pp. 359. $4.95.)

If the meaning of John Hunter to science—particularly medical science—and therefore to humanity has been too little appreciated outside the professional community, this book should serve to repair the flaw in the information of otherwise literate persons.

The author recalls some of the titles that have been bestowed by scientists and scholars upon this 18th century Scot (1728-1793), and in his book he tells the reasons. John Hunter has been variously called "the most important naturalist between Aristotle and Darwin," "a philosopher whose mental grasp embraces the whole range of nature's works," "with the exception of Hippocrates, the grandest figure in his profession," "a urologist a hundred and fifty years ahead of his time," "the first to teach the science of surgery as Paré two hundred years before had advanced the art," "the Shakespeare of medicine," "one of the greatest men the English nation has produced." Kobler also remarks that the Encyclopedia Britannica" devotes more space to Hunter than to Linnaeus, Paré, Harvey, Jenner, Lister, Simpson, Pasteur, Freud, or Fleming."

The brothers William and John Hunter were about as unlike as any two men could be. William was well-behaved, ambitious, snobbish, perhaps a trifle "unco 'guid." John was runty, red-haired, wayward, the youngest of 10. William was university trained and destined for the Church, but considered himself unfit "to wag my pow in a pu'pit" and soon became medical apprentice to William Cullen. At 21 he was in London, a favorite pupil of Smellie, the famous man-midwife, as accouchers were disrespectfully called, and on his way in a brilliant career as surgeon, obstetrician, anatomist, with many students taking his lectures and demonstrations. John, intensely curious about everything growing, animals and plants, was unmanageable in school, was taken out at 13 and had no further formal education. At 20, and still apparently without prospects, he was taken on by his brother William in London as an assistant.

Here he was promptly engrossed in the mysteries of the human body, and became expert in anatomising—also in securing the necessary material. He never engaged in Burkeing but he knew the ways of the resurrection men and quite probably indeed shared them.

During 12 years together "the brothers kept up a rate of activity that defied the limitations of time and human energy, working sometimes in collaboration, sometimes independently, they undertook 17 major investigations and innumerable minor ones, invented surgical procedures, taught ever-increasing numbers of students, pursued their own professional education, and treated patients."

John's semi-literacy was his main handicap. "Few scientists have ever been so poorly equipped with the tools of communication." But his dissections and demonstrations were eloquent. "I turn over the volume of nature," said John Hunter, and his penetration into that volume went beyond that of his contemporaries. He anticipated Darwin "by almost 100 years in enunciating the principle that the human embyro at each stage of development resembles the mature form of some lower species."

Both brothers were tireless collectors, but John went far beyond William; the building of his museum of comparative anatomy and natural history became a real addiction, running him heavily into debt. "It was the most important of its kind before or since." The Hunterian Museum is now the property of the Royal College of Surgeons. The Government had purchased it for £15,000, "about a fifth of what John spent on it."

The first private anatomical school in America was established by William Shippen of Philadelphia on his return in 1762 from several years study with the Hunters.

Contrasting with John, William had social as well as professional aspirations. His practice had become largely obstetrical. He made man-midwifery not merely respectable, but fashionable. He was sought after among the nobility and at Court ; he deliverd 10 of Queen Charlotte's 15 children.

John had seen service in the Seven Years' War while William thrived at home. He had replaced his brother by a new assistant and an estrangement began. John had hard grubbing, with his army pension of 5 shillings a week. Gradually, he reestablished himself as surgeon, investigator, innovator and collector, and in due course—again in contradistinction to William—considered the problem of marriage.

Never was a stranger love affair than that of John Hunter and Anne Home. Discussing their marriage plans, it was John who put off the date and gave the wrong reason. It wasn't his low economic status, but an experiment on himself he wanted to try—to find out, if he could, whether syphilis and gonorrhoea were simply, as he thought, different manifestations of one disease. He infected himself from one of his venereal patients, obviously suffering

from gonorrhoea. He watched for symptoms of syphilis in himself and was not disappointed. His patient harbored both organisms. He allowed the disease to run its course for three years before "curing" it, as he believed, with mercury. Four years after the initial postponement, John and Anne were happily married. Of four children of the first five years of marriage, two died in infancy, and two reached adult life, both sooner or later becoming mental cases.

Throughout his professional career, John was ...ably associated with St. George's Hospital ...ere students flocked to him from other doc... who walked the wards. As a lecturer, hov..., he was hopeless at first and never a suc...ss. On one occasion when he found an audience of one, "he dragged a skeleton into the room, seated it, and with a pawky grin began : 'Gentlemen . . .'"

Early American medicine owed much to William and John Hunter, especially to the latter. "Nearly the whole of Colonial physic, surgery, and obstetrics, as they began to move away from empericism reflected Hunterian doctrines." It was William Shippen who led the parade of Colonial pioneers to the famous brothers in London. The debt was formally acknowledged when Benjamin Franklin, president of the American Philosophical Society, proposed the election of John Hunter as an honorary member of that distinguished brotherhood ; and it was done.

At home there were envious enemies. John was so far in advance of most of his contemporaries in his physiological and anatomical researches, in his prodigious industry and in his startling and successful innovations in surgery—while adhering to his rule never to perform an operation that in like circumstances he would not have done upon himself—that jealousy and hostility in lesser men were to be expected. He was not boasting when he said : "I am a pigmy in knowledge, yet I feel as a giant compared to these men."

Kobler's book is a vivid story of the dramatic life of John Hunter. But it is much more; it carries through the parallel lives of the two brothers, and it reflects the social climate of the two countries so intimately involved, with their mutual prejudices. Numerous well known figures whose paths crossed those of the Hunters also have their exits and entrances and personalities, and events fit into their places as related to that extraordinary individual who was John Hunter. And again he could say without boasting : ". . . when I am gone there will not soon be another John Hunter." This book, excellent as it is, has no photograph of the hero.

In the coat-of-arms of the family was the motto: "Hunter blow your horn." In their several ways both William and John did.

C. B. F.

The Office Assistant in Medical Practice. By *Portia M. Frederick* and *Carol Towner.* (Philadelphia : W. B. Saunders Company 1960, pp. 407. $5.25.)

Essentially a teaching aid for schools where there are training programs for medical assistants, it will also serve as a reference manual for those working in doctors' offices and learning their duties on the job. Likewise, it will help busy doctors in training their office assistants, outlining as it does not only office procedures but also basic medical techniques and knowledge such as how to give injections, prepare medications and assist in physical examinations.

P. P. T.

Rehabilitation of the Mentally Ill—Social and Economic Aspects. Edited by *Milton Greenblatt, M.D.* and *Benjamin Simon, M.D.* (Washington, D. C. : American Association for the Advancement of Science, 1959. pp. 260. $5.00.)

The volume brings together papers presented December 29 and 30, 1957, at a symposium in Indianapolis, sponsored by the American Psychiatric Association, the Section on Social and Economic Sciences of the American Association for the Advancement of Science and the American Sociological Society. The book is a readable, concise presentation of current thinking and ideas of a group of men closely associated with developments in the field.

The content area of rehabilitation of the mentally ill is reported in Part I, by Ewalt, Greenblatt, Hunt and Simon. Greenblatt and Simon state that the maximum rehabilitation effort in the hospital may be evoked through greater understanding of the institution's social organization. Mental illness reflects the harsh conditions imposed by society upon its citizens. Basically, the conditions are treatable and preventable through social change. The hospital as a social organization may aid or retard recovery. Interpersonal relationships and therapeutic use of self are underscored as important factors to this end. Charlotte Green Schwartz, in discussing this section says that effective help to the mental hospital patient requires the development of community pro-

grams. However, treatment and rehabilitation, no matter how modern the mental hospital may become, will be incomplete if the process of helping patients return to a place outside the hospital is confined to intramural preparation alone.

The philosophy of rehabilitation is discussed by Martin in Part II, and program development by Notman. The discovery and analysis of the patient's assets (in contrast to "treatment," which is a direct attack on the disability), is the aim of the rehabilitation process. Notman notes there are three teams within a mental hospital on which the psychiatrist may serve—the custodial, the therapeutic and the rehabilitative. The psychiatrist joins one or the other of these teams and his presence on it gives it dominance. The one selected becomes the one with the most status in the hospital. The training of the psychiatrist leads him often to choose the therapeutic team. His lack of understanding and interest in the areas outside of his own direct therapy, often hampers the rehabilitation of patients. Work programs are discussed by Landy and Raulet, ancillary therapies by Key, and Wittkower and Azima advance a hypothesis for occupational therapy formulated in dynamic terms. The potential of work and tangible rewards serve as motivating factors. The value of realistic work is highlighted. John Cummings in his discussion indicates that rehabilitation helps overcome handicaps. In psychiatric disorders those handicaps may be orientation disturbances, communication disturbances or the loss of group skills.

Part III covers the transition from hospital to community. Greenblatt briefly presents rehabilitation goals. The section on vocational rehabilitation by Temple Burling is a discussion of Sivadon's transitional home in Paris for male patients who live together while adjusting to employment. Vocational rehabilitation techniques or current research projects in the vocational area are not presented.

Brooks ably describes a Half Way House with helpful details for day to day problems that arise. Knudson makes brief mention of industrial therapy and the V.A. program within the Veterans Administration for employing patients while still in the hospital as an aspect of their preparation for a job in the community. Carmichael presents his work in after care with a brief discussion of the Fountain House Social Center Program. Hewett, in discussing this section, indicates that the transitional programs are aimed at reducing the disability induced by prolonged hospitalization.

The implications of rehabilitation are presented by Gruenberg and Huxley who suggest methods for organizing staff interaction and inter-agency communication.

Kris studied 250 psychotic patients in an after care clinic of whom 189 were schizophrenics and showed that one-third of untreated patients suffer relapses and must return to the hospital. When patients were maintained on drug therapy, only 10% return.

Black describes the Altro sheltered workshop program as a resource for rehabilitation and Olshansky, presented a study on employer receptivity to hiring former mental patients. Three-fourths of 200 interview employers expressed a willingness to have ex-patients work for them, but only 27 had knowingly employed an ex-mental patient. Olshansky suggests that instead of educating employers it might be more profitable to concentrate effort on the better preparation of the patient for release. Knight Aldrich suggested that all rehabilitation programs be carefully studied for leads as to areas that might prove profitable for research and might offer reasonable rewards from expended money.

The book is a valuable document, outlining the progress in the field of psychiatric rehabilitation and some of the problems and issues that are its major concern. It is recommended reading for psychiatrists in mental hospitals and for those who work with adults in community psychiatric facilities. It will be of use to psychiatrists working in public health programs, and to those with teaching responsibilities. All workers in the field of psychiatric rehabilitation will also find it useful, not as a source book for guidance in program building but as a thoughtful assessment of the principles upon which rehabilitation rests and of the progress made to date. The book has more coherence and more substance than most conference reports.

WALTER E. BARTON, M.D.,
Boston 24, Mass.

HYSTERIE, REFLEX UND INSTINKT. By *Ernst Kretschmer.* (Stuttgart: Georg Thieme Verlag, 1958, pp. 148 Seiten, 2 Abbildungen, 8°, kartoniert. DM 9.80 ($2.35), Ganzleinen DM 12.80 ($3.05.)

Ernst Kretschmer, who established his fame in the 1920's through his work on constitutional differences in schizophrenic and manic-depressive patients, discusses hysteria, reflex and instinct in this book. Hysteria is considered a reaction type which utilizes certain reflex and other biologically patterned mechanisms. Even a reader fully familiar with the German language finds it difficult to grasp the content of a not too well organized little volume. It is

impossible to convey the ideas to the American reader, since American psychiatry has followed such different trains of thought. The present volume represents the sixth enlarged and improved edition of a small volume which was published decades ago, and seems no longer entirely up to date.

CLEMENS E. BENDA, M.D.,
Waverly, Mass.

A TEXTBOOK OF MEDICINE. 10th Ed. Edited by *Russell L. Cecil, M.D., Sc.D.*, and *Robert F. Loeb, M.D., Sc.D.* (Philadelphia : W. B. Saunders, 1959, pp. 1665, $16.50.)

The sections on mental illness in such a deservedly popular textbook as "Cecil and Loeb" have an importance out of proportion to their brevity. This book is the first recourse of many students and graduates faced with a clinical problem. In general the sections on psychiatric disorders are well done. The authors of the discussions of neuroses and psychoses avoid the pitfalls of dogmatic, overclassified description and verbosely speculative interpretations. The common somatic symptoms which bring mentally ill patients to general physicians and specialists are properly emphasized. These symptoms test skill in diagnosis but of even more importance they challenge the physician not only to discover the patient's underlying personal difficulties but also to help him with them. The excellent section on the treatment of neurotic patients should encourage non-psychiatrists to develop their abilities in psychotherapy. In a future edition it would be worthwhile saying something about the place of the general physician in the care of chronically psychotic patients, particularly when increasing numbers are being discharged from mental hospitals to their homes.

WILLIAM SPAULDING, M.D.,
Toronto.

KLINISCHE PSYCHOTHERAPIE INNERER KRANKHEITEN. (Clinical Psychotherapy of Internal Diseases) (Berlin-Gottingen-Heidelberg : Springer-Verlag, 1959. DM 16,80.)

This small monograph, 68 pages long, consists of 6 lectures given at the opening of the Department of "Clinical" Psychotherapy of Internal Diseases at the University of Freiburg, Germany. (The term clinical would be best translated as : in a hospital setting.) The first 2 lectures were given by psychiatrists : J. H. Schultz, who is known by his book about the Autogenic Training, relaxation exercises as a form of psychotherapy ; and, H. Goeppert, who wanders in his lecture through many fields starting with the problem of the soma-psyche dualism and soma-psyche unity, discussing Freud, Weizsaecker, Jaspers, the existentialists, and the question whether there can be a psychotherapy of the psychoses. His leitmotif is : to learn from every school of psychotherapy. Though he is in full agreement with the desirable convergence of psychiatry and internal medicine he, understandably enough, sprinkles his lecture with warnings.

The next 4 lectures were given by 4 internists who worked in this newly opened department. They concern the scientific basis of a psychotherapy of internal diseases and several case reports. The lectures are on a high level, stimulating, speculative and hence, occasionally, confusing. It may be illustrative to mention that in the bibliography of the third lecture you find not only Franz Alexander's Psychosomatic Medicine but also Kant's Critique of Judgment. The authors stress that their research and their practical work are first attempts to clarify a new concept of the nature of disease ; to pass, to return and to repass the frontiers between internal medicine and psychiatry. They also want to help the general practitioner in regard to understanding and treating his patients in a broader and more intensive way than before.

While I was reading the monograph I was wondering whether there are attempts in Germany, as they have now started here, to make the medical student familiar with the problems of psychosomatic medicine. But I did not find any mention of this.

FRITZ MOELLENHOFF, M.D.,
Chicago, Ill.

PROGRESS IN NEUROLOGY AND PSYCHIATRY. Vol. 14. Edited by *E. A. Spiegel.* (New York : Grune & Stratton, 1959, pp. 656. $12.00.)

For the fourteenth consecutive time a volume has been published as a review of the year's progress in the fields of neurology and psychiatry. In 36 chapters, 60 contributors have surveyed the current productions, making reference to over 4000 publications.

The subject is broadly divided into 4 sections : Basic Sciences, Neurology, Neurosurgery and Psychiatry. A compilation of this nature will serve a variety of purposes. As has been the case with previous volumes, it should find a broad use amongst those interested in neurology and psychiatry, either for the purpose of a leisurely ramble through the recent literature, or for the detailed examination of a more limited field of interest.

STANLEY E. GREBEN, M.D.,
University of Toronto.

VICTOR VANCE ANDERSON

IN MEMORIAM

VICTOR VANCE ANDERSON
1878-1960

On July 26, 1960, the Association lost one of its oldest Life Fellows and best known members in the death of Dr. V. V. Anderson in his 82nd year. He died at his home at Staatsburg-on-Hudson, N. Y. on the grounds of the School he had founded and loved and of which he had been active as Director and at work with the students until a bare two months before the end.

Dr. Anderson was born at Barbourville, Kentucky, December 26, 1878. He came from a family with strong medical traditions. His maternal grandfather, Dr. Oliver Harndon, was one of the pioneer surgeons in Kentucky, several of his uncles were physicians and he, himself, was the forty-second doctor in the immediate connection. Before he was out of grade school, his inclinations toward medicine were reinforced by working in the pharmacy of one of his uncles, who encouraged him in that direction. He attended Union College in Barbourville, where he achieved a distinguished academic record, and graduated from the University of Louisville Medical School in 1903. He was elected to the Honor Medical Fraternity, Alpha Omega Alpha. He entered general practice in Lynchburg, Virginia, but this was not a city practice as we understand it today, for Dr. Anderson described frequent trips on horseback or by horse and buggy into the neighboring country and the long hours spent on these calls in all sorts of weather and at all times of the day and night. He was known not only as a good diagnostician and therapist, but as a man vitally interested in his patients and in their everyday problems. With this background of experience it is not surprising that he should be specially intrigued by the understanding of human behavior offered by psychology, and in 1911 he went to Harvard University for training in psychiatry. In 1913, while he was on the staff of the Boston Psychopathic Hospital, he was selected from 120 applicants to become the Medical Director of the Psychiatric Clinics of the Municipal Court in Boston, a unique position in the medical and legal world at the time. Three years later he obtained the Master's Degree in Psychology at Harvard.

In 1918, Dr. Anderson was appointed Associate Medical Director of the National Committee for Mental Hygiene. His first assignment was the direction of mental health surveys, which involved investigations of the incidence of mental disease and mental deficiency and the facilities available to deal with the problems. In 1922 he was placed in charge of the organization and development of child guidance clinics and was instrumental in the establishment of the first such clinics in several major cities in the United States. Two years later, in 1924, he left the National Committee to become Director of Medical Research for the R. H. Macy Department Store in New York City, a position which he held for 7 years. In the meantime, he had laid the foundations for the School which bears his name, not only figuratively speaking in the sense of developing an ideology and methodology, but also literally in the sense of purchasing land and buildings, collecting a staff and enrolling a few students. In 1931, he began to devote his full time and energy to the School and its progress continued to be his major interest and exclusive professional responsibility for the rest of his life. When he married the present Mrs. Anderson in 1930 after the death of his first wife, the School became a family project. For many years Mrs. Anderson has served as business manager, and Dr. Anderson's only daughter by his first marriage is the wife of the headmaster.

Dr. Anderson was the author of two books, *Psychiatry in Industry* and *Psychiatry in Education*, the first of which, published in 1929, has been translated into several foreign languages, including Chinese, and is still required reading in some colleges. He contributed chapters to *Why Men Fail* edited by Dr. Morris Fishbein and Dr. William A. White, *The Healthy*

Mind by Henry B. Elkind and wrote a number of papers on the various phases of psychiatry in which he was interested. He was one of those invited to contribute to the Centennial issue of the *American Journal of Psychiatry* in 1944, and wrote the article "Psychiatry in Industry" for that special issue. He was an active member of many scientific societies, including the American Orthopsychiatric Society, of which he was one of the founders and the first presiding chairman, the American Psychopathological Association, the American Academy of Child Psychiatry, the New York Academy of Sciences, the Progressive Educational Society, the Academy of Religion and Mental Health, and the New York Society for Clinical Psychiatry in addition to the local and state societies and the American Medical Association. His alma mater, Union College, honored him with the degree of Doctor of Laws in 1935, and in 1953 he was awarded the Fifty Year Service in Medicine Certificate of the Medical Society of the State of New York.

The varied aspects of Dr. Anderson's professional life might seem incongruous as a preparation for a major career in the application of psychiatry to education. Diametrically opposed to the idea of opportunism or purposeless drifting, Dr. Anderson had planned his future carefully and conscientiously. His fundamental interest in people, stimulated during his years of country practice, naturally led to the study of psychiatry, and his association with the courts to an especial concern with people who were poorly adapted to society. His activities with the Mental Health National Committee indicated the dimensions of the problem and focused his attention on children and adolescents rather than adults. Finally, his experience in industry showed him, on the one hand, why seemingly promising workers fell short of expectations and, on the other, what might be done with the apparently inadequate individual to bring out his highest potential. With this background, the step to the foundation of a school operated under psychiatric principles is not only logical, but, perhaps inevitable. Dr. Anderson loved flowers and poetry and sometimes described himself as a dreamer, but he was emphatic on the subject of translating dreams into action and was an outstanding exponent of his theory.

His philosophy was essentially an expansion of the family doctor approach to human problems. Psychiatric therapy, for him, was not merely a matter of obtaining personality integration in an abstract sense. He believed that the well integrated person must be able to relate to and communicate with his fellows, that he must have a goal attainable only by strenuous effort and that, in the course of the struggle the patient's life should be constructive and productive. Although not pessimistic about adult problems, he felt strongly that the best opportunity for helping people was to be found by treating them in their earlier, more plastic years. This, of course meant the school years, and he conceived of education as a partner with psychiatry. He placed less emphasis on formal psychotherapy than on human associations or what is often called milieu therapy, feeling that the latter was a more effective tool for the majority of his patients, though he certainly used and did not disparage individual psychotherapy in specific cases.

Dr. Anderson will be remembered not so much for his professional achievements in a narrow sense, as for his character. The sterling qualities of honor and uprightness which distinguished him are becoming rarer these days, and are often less highly regarded than the more meretricious scientific or pseudo-scientific achievements which have been the sole claim to recognition of many lesser men. His monument is his ideals embodied in the Anderson School, not as a perishable structure of bricks and mortar, but as an expression of ideals which have influenced profoundly, and will continue to influence the minds and actions of its students. One of them has written a few lines quoted in the Headmaster's memorial address, which might well serve as an appropriate epitaph. "His complete freedom from malice or pettiness, his grandeur of outlook, his wonderfully clear sense of justice, always tempered by warm humanity and compassion will forever be his fond memorial in the hearts of all who knew him." *Requiescat in pace.*

Leslie R. Angus, M.D.

To control agitation—a symptom that cuts across diagnostic categories

Thorazine®, a fundamental drug in psychiatry

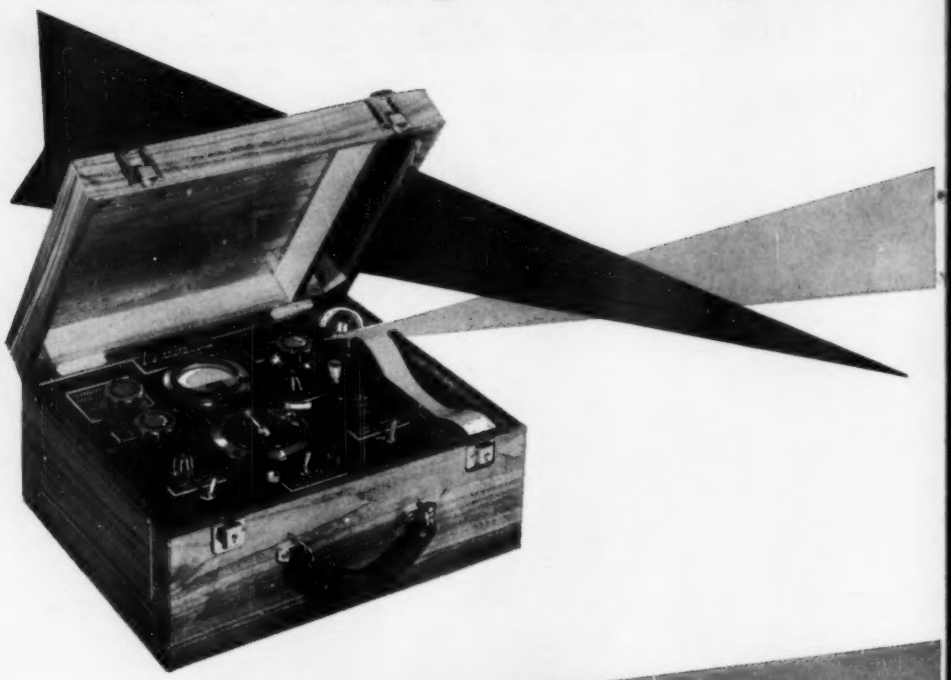
brand of chlorpromazine

—Because of its sedative effect, 'Thorazine' is especially useful in controlling hyperactivity, irritability and hostility. And because 'Thorazine' calms without clouding consciousness, the patient on 'Thorazine' usually becomes more sociable and more receptive to psychotherapy.

leaders in psychopharmaceutical research

SMITH KLINE & FRENCH

faster therapeutic response



REITER MODEL SOS PROVIDES FOR ALL THE FOLLOWING TECHNIQUES:

CONVULSIVE THERAPY (maximum convulsive and therapeutic efficiency) • **NON-CONVULSIVE THERAPIES** • **ELECTRO-SLEEP THERAPY** • **FOCAL TREATMENT** (unilateral and bilateral) • **MONO-POLAR TREATMENT** (non-convulsive or convulsive) • **BARBITURATE COMA** (and other respiratory problems) • **MILD SEDAC** (without sedation) **DEEP SEDAC THERAPY** (with sedation) • **PRE-CONVULSIVE SEDAC** (for anxious patients who resist **EST**) • **POST-CONVULSIVE SEDAC** (for deep sleep) • **NEUROLOGICAL CONDITIONS** • **MEASUREMENT PROCEDURES**

Model SOS contains the Reiter unidirectional currents and three SedAc ranges as part of the single selector control. Other models available are: 1. Model S containing only the unidirectional currents; 2. SedAc (attachment) to be used with Model S; 3. SedAc (self-powered) an independent instrument.

REUBEN REITER, Sc.D.

with...

REITER MODEL SOS

the one instrument combining the strongest convulsive currents with powerful yet gentle sedative currents

A SINGLE CALIBRATED KNOB CONTROLS ENTIRE TREATMENT

- **exceptionally fast clinical therapeutic response**
- **most efficient convulsive currents result in minimal side effects — apnea, thrust, confusion and treatment-generated anxiety are negligible**
- **patients are quickly clear and bright following treatment**
- **difficult cases have responded to SedAc deep sleep therapy — powerful, deep, effective yet safe treatments are easily applied**
- **SedAc current establishes better transference — patients become communicative**
- **anxious aversion to EST minimized by gentle SedAc current**
- **one-knob, with safety lock, controls convulsive and sedative currents**
- **multiple units used in many hospitals for simultaneous deep sleep treatments — with same doctor-nurse team required for one machine**
- **clinical studies have evaluated a new measurement procedure to determine areas of cerebral damage and the degree of malfunction**

Only Reiter, the original unidirectional current electrostimulators, are authentically backed by extensive clinical experience with over 200 references in literature and text-books.

64 WEST 48th STREET, NEW YORK 36, N. Y.

Why Deprol is the first drug to use in depressions

Clinical reports indicate that many depressions can be relieved by Deprol and psychotherapy, without recourse to more hazardous drugs or EST.

Deprol relieves the patient's related anxiety, insomnia and anorexia without danger of overstimulation, thus permitting better rapport to be established sooner, and facilitating more effective treatment.

Deprol acts without undue delay. Its effect can be determined quickly. If unusual cases require additional or alternative therapy, this will be quickly discernible.

Deprol can be controlled – there is no lag period of a week or two over which drug effects continue after medication is stopped. In cases where alternative therapy may be needed, it can be started at once.

Deprol is safe – does not produce liver damage, hypotension, psychotic reactions or changes in sexual function; does not interfere with other drug therapies.

Deprol®

benactyzine + meprobamate

Composition: Each tablet contains 1 mg. 2-diethylaminoethyl benzilate hydrochloride (benactyzine HCl) and 400 mg. meprobamate.

Supplied: Bottles of 50 light-pink, scored tablets.

Dosage: Usual starting dose is 1 tablet q.i.d. When necessary, this dose may be gradually increased up to 3 tablets q.i.d.

WALLACE LABORATORIES
Cranbury, N. J.

Bibliography *(11 clinical studies, 784 patients):*
1. Alexander, L. (35 patients): Chemotherapy of depression – Use of meprobamate combined with benactyzine (2-diethylaminoethyl benzilate) hydrochloride. J.A.M.A. 166:1019, March 1, 1958. **2.** Bateman, J. C. and Carlton, H. N. (50 patients): Meprobamate and benactyzine hydrochloride (Deprol) as adjunctive therapy for patients with advanced cancer. Antibiotic Med. & Clin. Therapy 6:648, Nov. 1959. **3.** Bell, J. L., Taulbee, H., Santy, A. and Pulito, F. (27 patients): Treatment of depressive states in office practice. Dis. Nerv. System 20:263, June 1959. **4.** Breitner, C. (31 patients): On mental depressions. Dis. Nerv. System 20:142, (Section Two), May 1959. **5.** Landman, M. E. (50 patients): Choosing the right drug for the patient. Submitted for publication, 1960. **6.** McClure, C. W., Papas, P. N., Speare, G. S., Palmer, E., Slatterry, J. J., Konefal, S. H., Henken, B. S., Wood, C. A. and Ceresia, G. B. (128 patients): Treatment of depression – New technics and therapy. Am. Pract. & Digest Treat. 10:1525, Sept. 1959. **7.** Pennington, V. M. (135 patients): Meprobamate-benactyzine (Deprol) in the treatment of chronic brain syndrome, schizophrenia and senility. J. Am. Geriatrics Soc. 7:656, Aug. 1959. **8.** Rickels, K. and Ewing, J. H. (35 patients): Deprol in depressive conditions. Dis. Nerv. System 20:364, (Section One), Aug. 1959. **9.** Ruchwarger, A. (87 patients): Use of Deprol (meprobamate combined with benactyzine hydrochloride) in the office treatment of depression. M. Ann. District of Columbia 28:438, Aug. 1959. **10.** Settel, E. (52 patients): Treatment of depression in the elderly with a meprobamate-benactyzine hydrochloride combination (Deprol). Antibiotic Med. & Clin. Therapy 7:28, Jan. 1960. **11.** Splitter, S. R. (84 patients): The care of the anxious and the depressed. Submitted for publication, 1959.

How to Acquire a Permanent Savings Habit in Minutes

Learning to save isn't the easiest thing in the world. But thousands of Americans have discovered a way that requires no learning—buying U. S. Bonds on Payroll Savings. Just ask your company's bond officer to set aside any amount you wish each payday. You'll be surprised how little it changes your spending habits—and how quickly your savings will grow. Try it and see!

Just sign your name and you're saving! Buying U.S. Bonds on payroll savings requires no "saving skill". Your payroll clerk does the saving for you.

NOW every Savings Bond you own—old or new—earns ½% more than ever before.

U. S. SAVINGS BONDS ARE MORE THAN A GOOD WAY TO SAVE

You save automatically with the Payroll Savings Plan.

You now get 3¾% interest at maturity.

You invest without risk under a U.S. Government guarantee.

Your money can't be lost or stolen.

You can get your money, with interest, anytime you want it.

You save more than money—you help your Government pay for peace. Buy Bonds where you work or bank.

You Save More Than Money With U.S. Savings Bonds

The U. S. Government does not pay for this advertising. The Treasury Department thanks The Advertising Council and this magazine for their patriotic donation.

ANCLOTE MANOR

on the Gulf of Mexico

A MODERN HOSPITAL FOR INTENSIVE PSYCHIATRIC TREATMENT

Owned and Operated by The Anclote Manor Foundation—A Non-Profit Organization

SAMUEL G. HIBBS, M.D. — PRESIDENT

Dynamically Oriented For: Individual Psychotherapy, Group Psychotherapy, Therapeutic Community, All Somatic Therapies • Large Staff Trained for Team Approach • Supervised Recreational Program

Medical Director
Lorant Ferizs, M.D.

Clinical Director
Walter H. Wellborn, Jr., M.D.

Director of Training
Peter J. Spoto, M.D.

Consultants in Psychiatry
Samuel G. Hibbs, M.D. — **Arturo Gonzalez, M.D.**
Samuel Warson, M.D. — **Roger E. Phillips, M.D.**
Zack Russ, M.D. — **Melvin Gardner, M.D.**
Walter Bailey, M.D. — **Martha McDonald, M.D.**
Robert Steele, M.D.

TARPON SPRINGS, FLORIDA • VICTOR 2-1811

Approved by American Psychiatric Assn., Accredited by Joint Commission on Accreditation of Hospitals
Member National Assn. of Private Psychiatric Hospitals, American Hospital Assn., Florida Hospital Assn.

Founded in 1904

HIGHLAND HOSPITAL, INC.

ASHEVILLE, NORTH CAROLINA
Affiliated with Duke University

A non-profit psychiatric institution, offering modern diagnostic and treatment procedures—insulin, electroshock, psychotherapy, occupational and recreational therapy—for nervous and mental disorders.
The Hospital is located in a 75-acre park, amid the scenic beauties of the Smoky Mountain Range of Western North Carolina, affording exceptional opportunity for physical and nervous rehabilitation.
The OUT-PATIENT CLINIC offers diagnostic services and therapeutic treatment for selected cases desiring non-resident care.

R. CHARMAN CARROLL, M.D., *Medical Director*
ROBT. L. CRAIG, M.D., *Associate Medical Director*
JOHN D. PATTON, M.D., *Clinical Director*

LOUDEN HALL

Neuro - Psychiatric Service

- SHOCK THERAPY — IN AND OUT PATIENTS
- ELECTRO - ENCEPHALOGRAPHY - IN & OUT SERVICE
- SPECIALIZED TREATMENT FOR ALCOHOLICS
- GENERAL HOSPITAL FACILITIES ON THE GROUNDS

THE BRUNSWICK HOSPITAL CENTER, INC.
AMITYVILLE, L. I., NEW YORK

AMityville 4-0053
New York City Tel. MUrray Hill 3-7012

Appalachian Hall • Asheville, North Carolina

ESTABLISHED 1916

An Institution for the diagnosis and treatment of Psychiatric and Neurological illnesses, rest, convalescence, drug and alcohol habituation.
Insulin Coma, Electroshock and Psychotherapy are employed. The Institution is equipped with complete laboratory facilities including electroencephalography and X-ray.
Appalachian Hall is located in Asheville, North Carolina, a resort town, which justly claims an all around climate for health and comfort. There are ample facilities for classification of patients, rooms single or en suite.

WM. RAY GRIFFIN, JR., M.D.
ROBERT A. GRIFFIN, M.D.
MARK A. GRIFFIN, SR., M.D.
MARK A. GRIFFIN, JR., M.D.

Fully approved by Central Inspection Board of APA.
Accredited by Joint Commission on Accreditation of Hospitals.

THE ANDERSON SCHOOL

Staatsburg-on-Hudson, New York

The Anderson School is a co-educational, residential school, offering general, business, academic, and college entrance courses from grade seven through high school. The school is accredited by the New York State Department of Education, and a majority of its graduates regularly enter college or junior college. It is psychiatrically oriented and is well equipped with the most modern methods and procedures, not only in academic, recreational and modern school environment fields, but particularly in personnel and guidance of each individual student. A full-time psychiatrist and psychologist are in residence. Our work emphasizes a much wider concept of student training and growth than is conceived of in present-day education. Educating the student as a person, adjusting and maturing his personality is a primary aim.

For further information write to
LEWIS H. GAGE, M.A., *Headmaster*

84 miles from New York City — Telephone: TUrner 9-3571

THE BRETT SCHOOL

DINGMANS FERRY, PENNSYLVANIA

In the Foothills of the Poconos

Intensive, highly individualized personal training for a small group of girls over five years of age. Carefully chosen staff. Special modern teaching techniques and program of therapeutic education. Varied handicrafts, cooking, nature study and field trips. Outdoor games, picnics and other activities. Comfortable, homelike atmosphere. Close cooperation with family physician. 70 miles from New York City.

Directors / **Frances M. King,** *formerly Director of the Seguin School*
Catherine Allen Brett, M.A.

References
Telephone Dingmans Ferry 8138

HALL-BROOKE HOSPITAL

An Active Treatment Hospital, located one hour from New York

Accredited by: The Central Inspection Board of the American Psychiatric Association
The Joint Commission on Accreditation of Hospitals

HALL-BROOKE, GREENS FARMS, BOX 31, CONN.

Telephone: WESTPORT CAPITAL 7-1251

George S. Hughes, M.D.
Leo H. Berman, M.D.
Albert M. Moss, M.D.
Louis J. Micheels, M.D.
Robert Isenman, M.D.
John D. Marshall, Jr., M.D.
Edward M. Keelan, M.D.
Peter P. Barbara, Ph.D.

The Children's Service

ROBERT E. SWITZER, M.D.
DIRECTOR

Outpatient consultation, evaluation and treatment for infants and children of grade school to 18. Residential treatment for elementary grade children with emotional and behavior problems.

The Menninger Clinic

TOPEKA, KANSAS

An advanced psychiatric research and treatment clinic in suburban montreal.

A fully accredited, 140 bed — modern psychiatric hospital with an integrated biological and dynamic psychotherapeutic program.

Set amidst stately grounds, with planned occupational and recreational therapy, for the patient's comfort and enjoyment.

Affiliated with the University of Montreal Department of Psychiatry, for under and post-graduate training of residents, psychologists, social workers and psychiatric nurses.

Brochures and rates on request.

A semi-relief of Our Lady of Sorrows at the main entrance.

INSTITUT ALBERT PREVOST

6555 GOUIN BOULEVARD WEST, MONTREAL 9, CANADA.

CARE and TRAINING for the MENTALLY RETARDED CHILD

The Training School at Vineland provides care and treatment for boys and girls 2 years or older with mental potential of 6 years. Complete professional staff. Electroencephalographic, and neurological examinations, individual psychiatric, psychological, physiological, and speech observations and therapies.

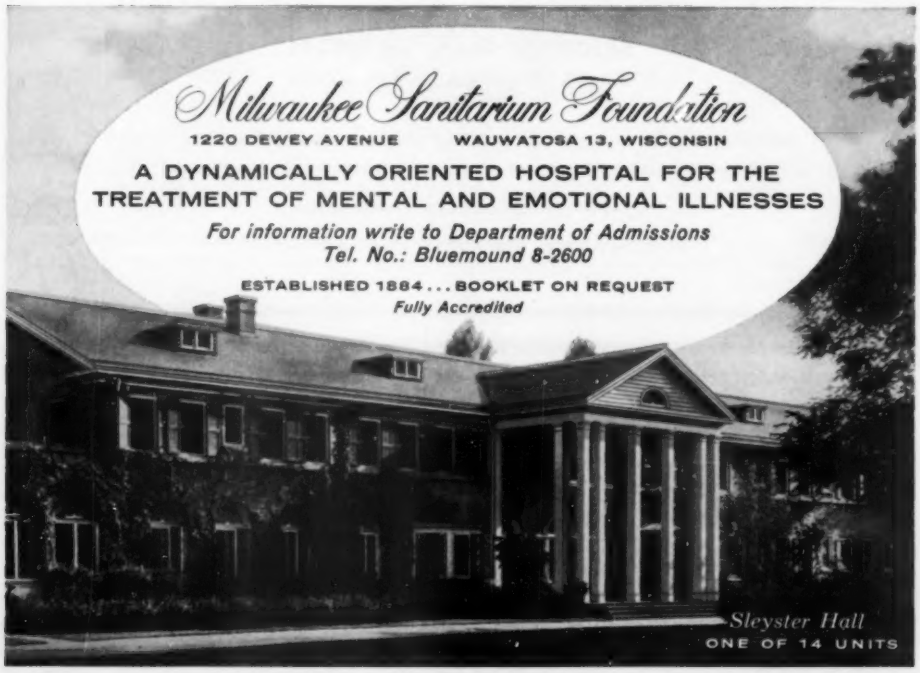
SIX COMPREHENSIVE PROGRAMS:

- Observation and Diagnosis
- Education and Training
- Custodial Care
- Residential Supervision
- Summer Program
- Psychiatric Treatment Center

The educational program aims at maximum development of each child. Training includes self-care; group living; formal classroom education; development of practical habits, attitudes and work skills. Children live in homelike cottages on 1600-acre estate. School, hospital, chapel, swimming pools, lake, working farm. The Training School Research Laboratory is famed for continuous study of causes, prevention and treatment of mental retardation. Established 1888. For information write: Registrar, Box N.

THE TRAINING SCHOOL AT VINELAND, NEW JERSEY

A private, non-profit residential center for the care and treatment of the mentally retarded


Milwaukee Sanitarium Foundation
1220 DEWEY AVENUE WAUWATOSA 13, WISCONSIN
A DYNAMICALLY ORIENTED HOSPITAL FOR THE TREATMENT OF MENTAL AND EMOTIONAL ILLNESSES
For information write to Department of Admissions
Tel. No.: Bluemound 8-2600
ESTABLISHED 1884 ... BOOKLET ON REQUEST
Fully Accredited
Sleyster Hall
ONE OF 14 UNITS

SANITARIUMS and PRIVATE HOSPITALS

BALDPATE, INC.

Geo. Fleetwood 2-2131 **Georgetown, Mass.**

Located in the hills of Essex County, 30 miles north of Boston

For the treatment of

psychoneuroses, personality disorders, psychoses, alcoholism and drug addiction.

Definitive psychotherapy, somatic therapies, pharmacotherapy, milieu-therapy under direction of trained occupational and recreational therapists.

HARRY C. SOLOMON, M.D.
Consulting Psychiatrist

GEORGE M. SCHLOMER, M.D.
Medical Director

THE EMORY JOHN BRADY HOSPITAL
401 SOUTHGATE ROAD, COLORADO SPRINGS, COLORADO

MElrose 4-8828

For the care and treatment of Psychiatric disorders.
Individual and Group Psychotherapy and Somatic Therapies.
Occupational, diversional and outdoor activities.
X-ray, Clinical Laboratory and Electroencephalography.

E. JAMES BRADY, M. D., *Medical Director*
C. F. RICE, *Superintendent*

FRANCIS A. O'DONNELL, M. D.
ROBERT W. DAVIS, M. D.
RICHARD L. CONDE, M. D.
H. C. HOBBS, Ph. D. Clinical Psychology

BRIGHAM HALL HOSPITAL
CANANDAIGUA, NEW YORK

FOUNDED 1855

Individual psychotherapy, occupational and recreational programs, shock therapy, selected cases of alcoholism and addiction accepted.

Special consideration for Geriatric cases.

HOWARD W. BERG, M.D., *Medical Director*

COMPTON SANITARIUM

820 WEST COMPTON BOULEVARD **COMPTON, CALIFORNIA**

NE 6-1185 — NE 1-1148

Member of American Hospital Association and National Association of Private Psychiatric Hospitals

High Standards of Psychiatric Treatment . . . . . Serving the Los Angeles Area

Fully Approved by Central Inspection Board of APA

Accredited by Joint Commission on Accreditation of Hospitals

G. CRESWELL BURNS, M.D.
Medical Director

HELEN RISLOW BURNS, M.D.
Assistant Medical Director

FAIR OAKS
Incorporated
SUMMIT, NEW JERSEY

A 70-BED MODERN, PSYCHIATRIC HOSPITAL FOR
INTENSIVE TREATMENT AND MANAGEMENT OF
PROBLEMS IN NEUROPSYCHIATRY

20 MILES FROM NEW YORK CITY — TELEPHONE CRestview 7-0143

OSCAR ROZETT, M. D.
Medical Director

THOMAS P. PROUT, JR.
Administrator

THE HAVEN SANITARIUM INC.
ROCHESTER, MICHIGAN

M. O. WOLFE, M.D.
Director of Psychotherapy

RALPH S. GREEN, M.D.
Clinical Director

GRAHAM SHINNICK
Manager

A psychoanalytically oriented hospital for the
treatment of mental and emotional illnesses.

Telephone: OLive 1-9441

Phone:
CHestnut 7-7346

WINDSOR HOSPITAL
A Non Profit Corporation
CHAGRIN FALLS, OHIO

Established
1898

A hospital for the treatment of Psychiatric Disorders. Booklet available on request.

JOHN H. NICHOLS, M. D.
Medical Director

G. PAULINE WELLS, R. N.
Administrative Director

HERBERT A. SIHLER, JR.
Secretary

MEMBER: American Hospital Association - Central Neuropsychiatric Hospital Association - National Association of Private Psychiatric Hospitals

ENTER NEW SUBSCRIPTIONS AND RENEWALS ON THIS FORM

AMERICAN JOURNAL OF PSYCHIATRY
1270 AVENUE OF THE AMERICAS, ROOM 1817
NEW YORK 20, NEW YORK

..... 19....
Date

Enclosed herewith is $ ..... for one year's subscription to the AMERICAN JOURNAL OF PSYCHIATRY beginning with Volume ..... Number .....

NAME .....
Print

ADDRESS .....

SIGNATURE .....

Subscription $12.00 a year or by the Volume. Foreign Postage $1.00 extra. Canada and South America Postage $.50 extra. New Volume began July 1960 issue.

Keep and protect your Journals in this new
VOLUME FILE CASE

ATTRACTIVE
INEXPENSIVE
SERVICEABLE

Note new price: $3.50 each

Please add 25 cents postage for each file ordered

ORDER DIRECT FROM
AMERICAN JOURNAL OF PSYCHIATRY
1270 Avenue of the Americas
New York 20, N. Y.
WHEN ORDERING PLEASE SPECIFY VOLUME NUMBERS

IMPORTANT

We are in urgent need of obtaining the January, 1893 issue of the American Journal of Psychiatry (Volume 49 #3)

We will pay $5 each for the first five copies received in this office.

Send to:
Austin M. Davies, Bus. Mgr.
American Journal of Psychiatry
1270 Avenue of the Americas, Rm. 1817, New York 20, New York

a new, improved, more potent relaxant for anxiety and tension

- effective in half the dosage required with meprobamate
- much less drowsiness than with meprobamate, phenothiazines, or the psychosedatives
- does not impair intellect, skilled performance, or normal behavior
- neither depression nor significant toxicity has been reported

alert tranquillity

Striatran®

EMYLCAMATE

- a familiar spectrum of antianxiety and muscle-relaxant activity
- no new or unusual effects—such as ataxia or excessive weight gain
- may be used in full therapeutic dosage even in geriatric or debilitated patients
- no cumulative effect
- simple, uncomplicated dosage, providing a wide margin of safety for office use

STRIATRAN is indicated in anxiety and tension, occurring alone or in association with a variety of clinical conditions.

Adult Dosage: One tablet three times daily, preferably just before meals. In insomnia due to emotional tension, an additional tablet at bedtime usually affords sufficient relaxation to permit natural sleep.

Supply: 200 mg. tablets, coated pink, bottles of 100.

While no absolute contraindications have been found for Striatran in full recommended dosage, the usual precautions and observations for new drugs are advised.

For additional information, write Professional Services, Merck Sharp & Dohme, West Point, Pa.

MSD MERCK SHARP & DOHME, DIVISION OF MERCK & CO., INC., WEST POINT, PA.

STRIATRAN IS A TRADEMARK OF MERCK & CO., INC.

HOMOGENEOUS GROUPING FOR OPTIMUM RESULTS

AT DEVEREUX SCHOOLS children of similar maturity, aptitude, and type of problem are homogeneously grouped in separate school-units. There are a total of twenty-two semi-autonomous residential units in Pennsylvania, California, and Texas. Each unit maintains its own highly individualized curriculum without losing its homelike atmosphere.

Remedial education at Devereux Schools extends from kindergarten through high school. General or college preparatory courses can be pursued, as well as vocational or commercial programs. Available to each student, as needed, are the professional resources of The Devereux Foundation, which employs a multidisciplined approach to his problems. This method combines the principles of psychiatry, psychology, medicine, and education to provide the therapies that will benefit him the most.

CLINICAL STAFF

J. Clifford Scott, M.D.
Edwin H. Abrahamsen, M.D.
Aurelio Buonanno, M.D.
Charles M. Campbell, Jr., M.D.
Fred J. Culeman, M.D.
Ruth E. Duffy, M.D.
William F. Haines, M.D.
Robert L. Hunt, M.D.
Richard H. Lambert, M.D.
Leonardo Magran, M.D.
Joseph J. Peters, M.D.
Jacob S. Sherson, M.D.
Albert S. Terzian, M.D.
Walter M. Uhler, M.D.
Tirso L. Vinueza, M.D.
Lance Wright, M.D.
F. Ellsworth Henry, S.T.D.
William J. Cohen, Ph.D.
Dorothy E. Conrad, Ph.D.
Sidney L. Copel, Ed.D.
Robert G. Ferguson, Ed.D.
Shirley M. Jahnson, Ph.D.
John R. Kleiser, Ph.D.
Murray Levine, Ph.D.
Henry Platt, Ph.D.
Edgar A. Smith, Ed.D.
George Spivack, Ph.D.
Anne Howe, M.S.
Kenneth E. Evans, B.S.

Psychoanalytic Consultants
G. Henry Katz, M.D.
Herbert H. Herskovitz, M.D.

THE DEVEREUX FOUNDATION

A nonprofit organization *Founded 1912*
Devon, Pennsylvania
Santa Barbara, California *Victoria, Texas*

SCHOOLS
COMMUNITIES
CAMPS
TRAINING
RESEARCH

HELENA T. DEVEREUX
Administrative Consultant

EDWARD L. FRENCH, Ph.D.
Director

WILLIAM B. LOEB
Treasurer

Professional inquiries for Eastern Schools should be directed to Charles J. Fowler, *Director of Admissions,* Devereux Schools, Devon, Pa. ; for Pacific Coast Schools, to Keith A. Seaton, *Registrar,* Devereux Schools in California, Santa Barbara, Calif. ; Southwestern residents address Devereux Schools of Texas, Box 336, Victoria, Tex.